The Bristol Medico-Chirurgical Journal.

"Scire est nescire, nisi id me
Scire alius sciret."

JUNE, 1910.

THE LONG FOX LECTURE:

THE SIXTH ANNUAL LECTURE ARRANGED BY THE COMMITTEE OF THE LONG FOX MEMORIAL,
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BY

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ON

THE DEVELOPMENT OF THE HUMAN SKULL.

YOU are assembled not so much for the purpose of hearing me deliver this lecture, but for the purpose of keeping green the memory of one who was as honoured a member of our profession as ever trod the boards of the room in which we are gathered.

By the kind invitation of your committee, the onus of delivering the lecture founded in honour of Dr. Long Fox has devolved on myself, and I propose in this lecture to deal with some embryological subjects on which I have worked for some years, and which more particularly concern the development of the human skull.

Few subjects have engaged the attention of so many workers as this which I have chosen, and the fact that some two hundred and fifty observers have worked at and written on it is, I think, a sufficient guarantee that the last word has not been said on the subject. Many of the old-day researchers have been handicapped by the methods of research available to them; and taking that into account, it is surprising that many of them have been as accurate as they have been in their conclusion, but naturally many errors have arisen.

Since the introduction of the wax-plate method, introduced by Born and improved on by Strasser, these errors are reduced to a minimum, and although the results obtained can only really be guaranteed to represent the conditions present in that embryo from which they were obtained, they are at least accurate. It may interest you to know how the models before you are made.

Serial sections of embryos or parts of embryos are cut to a convenient thickness, say 10 to 20 microns, and these are projected by means of a lantern microscope on to paper; paper of a very common type which will be readily absorbent is best. This paper, which is obtained in rolls, can be conveniently suspended, very much as a towel is suspended, and pulled out for serial drawings to be made on it. The projected image is arranged to be a certain magnification of the section, say 50 diameters, for a reason which I will explain later. The parts of the image which it is wished to model are then carefully drawn by means of a B crayon, which gives a good, dead-black image, and can be readily seen in a bright light, a great advantage over the ordinary lead pencil.

The drawing having been made, the paper containing it is cut off—a whole series may be drawn from the roll of paper, to be divided up later—and it is then placed face downwards on a lithographic stone which has previously been well moistened with turpentine, and if possible warmed. The paper is carefully flattened out to express air bubbles, then on the sides of the paper, at a convenient distance from the drawing, brass strips of a known thickness are laid, say 1 mm. Hot beeswax is then

poured on the paper between the strips and rolled out with a hot metal roller, the roller not being hot enough to scorch the beeswax.

The melted beeswax is then allowed to congeal, and another piece of paper is laid upon it, and this is carefully rolled until it comes to a level with the brass strips. We now have obtained a beeswax sandwich 1 mm. in thickness, which is just fifty times as thick as the section from which it is made. A 1 mm. plate is very convenient to cut and work with. The wax plate thus made is then placed under pressure for a time, and later is hung up to dry. When dry it is ready for use. All parts to be modelled are cut nearly completely around with a sharp knife held nearly vertically. They are not completely isolated, but kept connected by bridges with neighbouring parts of the future model. All other parts are cut away, the general result being like a piece of fretwork. Each plate is treated in the same way. The plates are then piled up one on the top of the other until as many as desired are in position. The superimposed edges are then welded together with a hot spatula, and what bridges are unnecessary are cut away with a sharp knife. The model so obtained is smoothed off and painted with one colour. This, very shortly, is the method which we know as Strasser's modification of the Born reconstruction method.

Before it is possible to understand the general process of growth of the skull, I must recall to your minds one or two fundamental facts of vertebrate structure. You all know that all vertebrates possess superimposed an alimentary canal, a notochord and a neural tube. You will remember, too, that by the side of the notochord masses of mesoblast appear, which gradually surround it and the nervous system. Were we dealing with the ordinary body region, which is simplest, we would say that the part which grew around the notochord and the nervous system formed the primordial membranous vertebral column. This becomes segmented at a later date, and chondrified to form the primordial cartilaginous vertebral column, chondrification taking place from the neighbourhood of the notochord in a dorsal direction to form ultimately a cartilagious tunnel for the spinal cord, which subsequently becomes ossified.

The general process is the same, with some restriction, in the region of the head. In the head region we have to deal with a neural tube, a notochord, and an alimentary canal (the pharynx), in that order dorso-ventrally. The notochord extends from that region which will become the permanent vertebral column as far as that up-growth from the primitive mouth which helps to form the pituitary body, but it is strikingly different from the notochord of the vertebral column in its relation to the primordial cartilaginous vertebral column. In the vertebral column this notochord runs centrally through the vertebræ, but in the skull it is seen to perforate the hinder region of the basilar part from above downwards, run underneath the middle part of the basilar region, and ascend through the anterior part of that region. For many reasons the hinder part of this basilar region, which ultimately becomes the occipital bone, is regarded as a part of the vertebral column which has been commandeered by the skull.

In the head region the membranous primordial capsule spreads from the region of the notochord around not only the neural tube or brain, but around the various sense organs connected with it, viz. the olfactory, the visual and the auditory, and the alimentary canal or pharynx. This part of the primordial capsule, save in the occipital region, gives no hint of segmentation, and there are probably many reasons why it should not be segmented, for as Hertwig tells us the skull undoubtedly arose in water-inhabiting animals, it was advantageous to have an unsegmented front-piece to act as a "cut-water," the means of locomotion in fishes being by powerful contraction of the trunk muscles. Further, it is necessary to have a fixed point from which the muscles moving the feeding apparatus can act; and finally, with the advancing importance of one extremity of the nervous system, it is important that the skeleton which encloses it shall not be a movable one.

That part of the membranous primordial capsule which surrounds the neural tube (brain) is conveniently termed the primordial membranous neuro-cranium, whilst that which surrounds the pharynx is termed the membranous-visceral

cranium. Both membranous neuro-cranium and visceral-cranium are at first practically uniform, but later thickenings take place in them, as pointed out by Levi, which thickenings correspond in great part with those parts which will become converted into cartilage, and ultimately into bone. These membranous thickenings do not all appear at the same time: the first to appear is the occipital, then follow the sphenoidal and the auditory capsule, and lastly the ethmoidal.

The membranous neuro-cranium having been established, chondrification next follows, leading to the formation of what is termed the primordial neuro-chondro-cranium.

The primordial neuro-chondro-cranium.—Before an intelligent view of the neuro-chondro-cranium can be obtained it is necessary to call to mind the conditions holding good in lower animals.

First let me state that in that lowly fish, the amphioxus, the skull is entirely membranous, the notochord forming a very important element in the floor of that cranium, and reaching forwards to its anterior extremity.

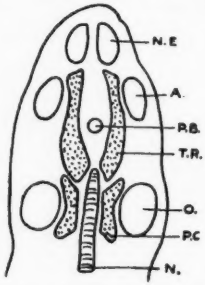
In the cartilaginous fishes the cranium is an almost complete cartilaginous box, but with the advance in size of the brain the cartilaginous box becomes less and less complete. The greater part of the roof of the cranium is formed by membrane, cartilage appearing only at the base of the cranium, the sides, and between the two halves in the form of a narrow cartilaginous bridge, as you will see in the reconstructed model of the head of the 30 mm. embryo (Fig. 1).

Let us now see how this cartilaginous primordial cranium grows—first in lower types, then in man.

Chondrification commences at the base in all types, in the neighbourhood of the notochord. In the lower types a pair of cartilages arises between the auditory vesicles and the notochord; these, from their relationship to the notochord, are known as the parachordals. In front of these, and enclosing between them the ethmoidal element of the pituitary body, arise two other cartilages called the trabeculæ; these unite together anteriorly, and spread out to form the ethmoidal plate, which is separately connected with the organ of smell. Posteriorly the trabeculæ

unite with the parachordals, which previously have united with one another around the notochord (Fig. 2) to form the basilar plate, and this basilar plate encloses the notochord as far forwards as the back of the pituitary body.

In man the arrangement is very different. The notochord certainly is traceable forwards as far as what is early recognised as the dorsum sellæ in the immediate neighbourhood of the pituitary body, but there are no distinct parachordal cartilages; further, the basilar plate is laid down behind the pituitary body in two segments, a more posterior and a more anterior, the two



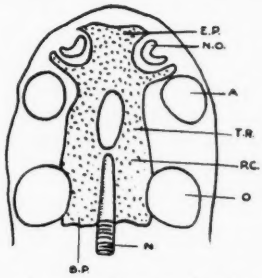


Fig. 1.—*An early stage in the chondro-cranium of a lower vertebrate.*
N.E.—The nasal epithelium. A.—Optic vesicle. T.R.—Trabecula. O.—Auditory vesicle. P.C.—Parachordal. N.—Notochord. P.B.—Pituitary body.

Fig. 2.—*A late stage in a similar vertebrate, in which the parachordals have fused with one another and with the fused trabeculæ.*
E.P.—Ethmoidal plate. N.O.—Nasal organ. A.—Optic vesicle. T.R.—Trabecula. P.C.—Parachordal. O.—Auditory vesicle. N.—Notochord. B.P.—Basilar plate.

being separated by a connective tissue interval, as first noticed by Kölliker (Fig. 3). There is, according to Levi, no justification for the description of trabeculæ. When the sphenoidal and occipital segments of the basilar plate have fused together, it will be seen that the relationship to the notochord is very different from that which has been previously described. The notochord, instead of running centrally through the basilar plate, enters it from above and behind after leaving the apex of the cartilaginous dens (odontoid process); then it sinks through the basilar plate, to run on its under surface in close contact with the epithelium

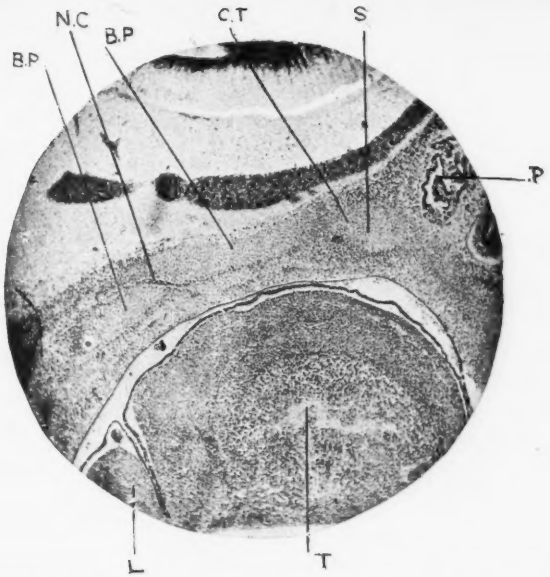


Fig. 3.—*Photomicrograph of a sagittal section of the head of a 15 mm. human embryo* (Dr. BARKER).
B.P.—Basilar plate. C.T.—Connective tissue bridge. S.—Sphenoid. P.—Pituitary body. N.C.—Notochord perforating basilar plate. T.—Tongue. L.—Larynx.

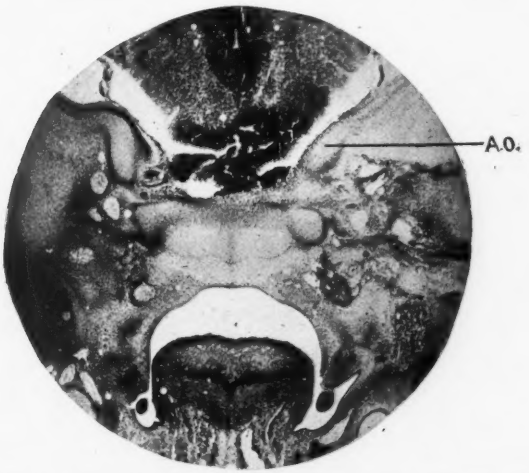


Fig. 8.—*Photomicrograph of a coronal section of a 19 mm.* (HARVARD) *embryo.*
A.O.—Is upper part of the orbital or lesser wing.

of the roof of pharynx; later it rises up through the cartilage of the basilar plate to end in the dorsum sellæ behind the pituitary body (Fig. 4).

The further process of growth of the chondro-cranium is of great interest. Various masses of cartilage appear independently at different periods—not, as was formerly thought, all at the same time. As my own work has chiefly concerned the sphenoidal region, I propose to deal more especially with it. The sphenoidal region is that part of the basilar plate in the neighbourhood of the pituitary body, and it may conveniently be

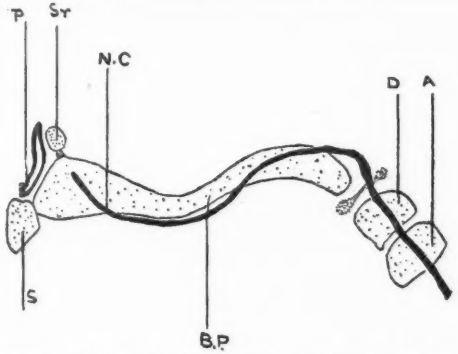


Fig. 4.—*Drawing of a reconstruction of the basilar plate of a 24 mm. embryo.* A.—Axis vertebra. D.—Odontoid or dens. B.P.—Basilar plate. N.C.—Notochord. Sr.—Dorsum sellæ, or posterior clinoid processes. P.—Pituitary body. S.—Anterior part of corpus sphenoidale.

divided into a pre- and a post-pituitary part. You all know that appended to the sphenoid in the adult are parts which go by the name of lesser and greater wings; pterygoid plates, internal and external (lingulæ); and small bones in front of the body, called sphenoidal turbinates. Until comparatively recently it has been customary to regard the wings of the sphenoid as outgrowths from the cartilaginous body of the sphenoid.

It will be shown that this, as Levi and others have also pointed out, is not the case. Let us consider first of all the case of the lesser wings, or alæ orbitales. These, already formed in the membranous primordial cranium, commence to chondrify outside

the optic nerve ; the nucleus of chondrification increases in size, growing backwards behind the optic nerve until it reaches the pre-pituitary part of the corpus sphenoidale, forming thus the hinder wall of the optic foramen ; at a later period the nucleus extends inwards in front of the optic nerve, and completes the optic foramen in front. As chondrification advances, the lesser wing becomes of enormous size, extending outwards beyond the orbit into what one knows later as the temporal fossa, in which it ends in a sharp point. In the drawing of a model of the sphenoid of a 19 mm. embryo (Fig. 5) the orbital wing (O.W.) is

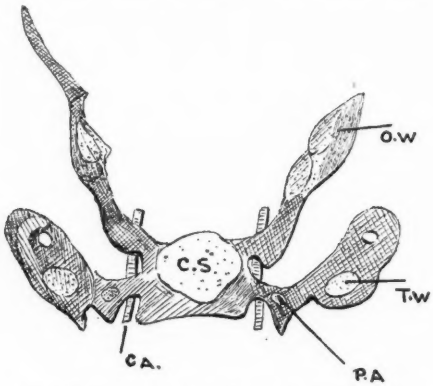


Fig. 5.—*Drawing of a reconstructed sphenoid of a 19 mm. embryo.*
O.W.—Lesser wing of sphenoid. P.A.—Processus alaris. T.W.—Greater wing of sphenoid. C.S.—Corpus sphenoidale.

seen in a pro-cartilaginous condition, extending almost vertically upwards from the corpus sphenoidale (C.S.), and about its centre a nucleus of cartilage is visible, especially well shown on the left side as an oval light patch.

In the drawings of another model of a 19 mm. embryo, lent by Professor Minot, of Harvard (Fig. 6), one sees the lesser wing from above, consisting of a curved mass of cartilage bending in behind the optic nerve, to reach but not fuse with the corpus sphenoidale (M.P.). An almost better impression is got of the condition by looking at the model from below (Fig. 7), where A.O.

is the orbital or lesser wing, and N.O. is the optic nerve. It is clear, then, that the lesser or orbital wing is developed quite independently of the body, as seen in the models represented.

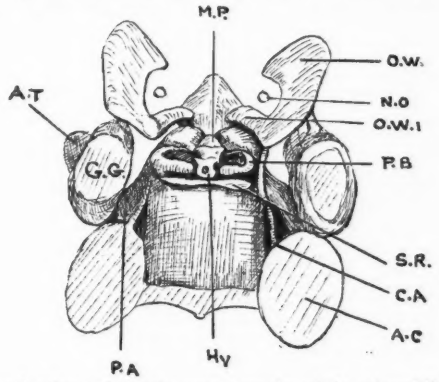


Fig. 6.—*Drawing from above of a reconstruction of the sphenoid of a 19 mm. embryo* (HARVARD COLLECTION).

O.W.—Lesser wing of sphenoid. O.W1.—That limb of the lesser wing which closes behind the optic foramen. S.R.—The independent dorsum sellæ. P.A.—Processus alaris, or lingula.

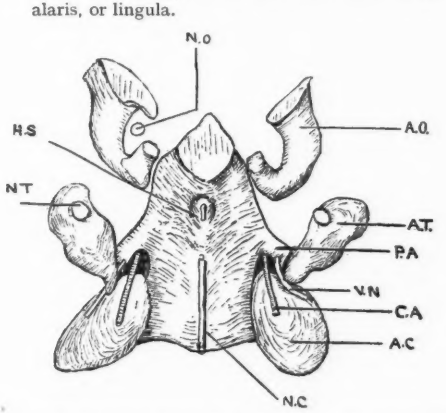


Fig. 7.—*Drawing of the same model as Fig. 6, from the under side.*

A.O.—Lesser or orbital wing of sphenoid. N.O.—Optic nerve. A.T.—Greater wing perforated by N.T.—The second division of the fifth nerve. P.A.—Processus alaris. A.C.—Auditory capsule. N.C.—Notochord.

If one examines a photomicrograph of a section of the embryo used in building up the model (Fig. 8) one can see, A.O., the lesser wing apparently separated into two parts by a gap, the upper part being oval in form, the lower nearly circular, and the lower circular part is separated from a central mass, the corpus sphenoidale, by a dark line—perichondrium. From the outer half of the lesser wing of the sphenoid there grows

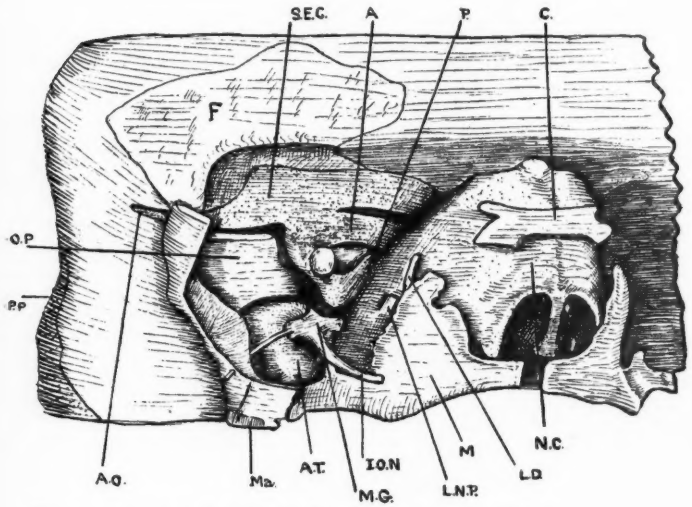


Fig. 9.—*A drawing of a model of the head of a 30 mm. embryo.*

A.—Lesser wing of sphenoid-anterior wall of optic foramen. P.—Posterior wall of optic foramen. S.E.C.—Spheno-ethmoidal cartilage. A.O.—Outgoing process of lesser wing towards P.P.—The parietal plate. A.T.—The greater wing of the sphenoid, or ala temporalis L.N.P.—Lateral nasal process of nasal capsule. O.P.—Connective tissue forming outer wall of orbit.

forward over the eyeball a plate of cartilage (Fig. 9), which at its inner end becomes connected with the nasal capsule. Its inner end is separated by a gap from the inner end of the lesser wing—the orbito-nasal fissure—a fissure through which the nasal nerve enters the orbit. This plate of cartilage, which is especially well

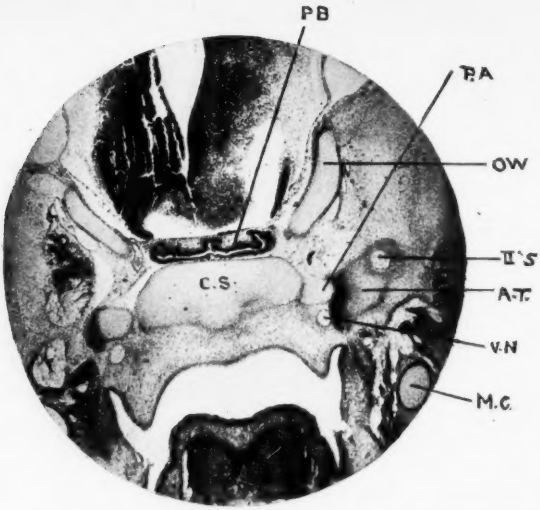


Fig. 10.—*Photomicrograph of a coronal section of a* 19 *mm. embryo* (HARVARD COLLECTION), *showing the independence of the greater wing.*

A.T.—Greater wing. II.5.—Second division of the fifth nerve. C.S.—Corpus sphenoidale. P.A.—Processus alaris.

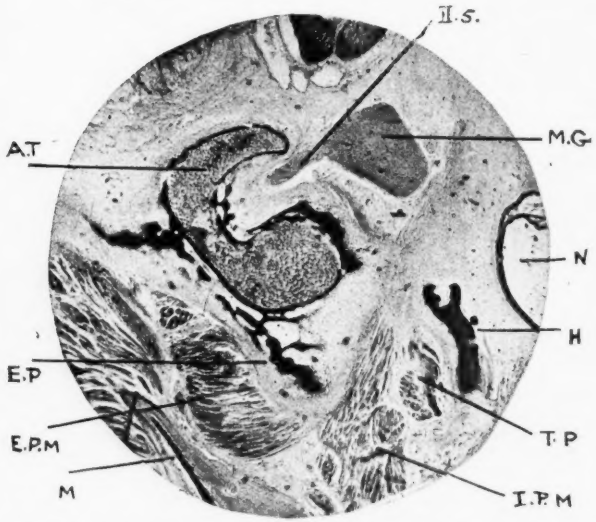


Fig. 11.—*Photomicrograph of a coronal section of the head of an* 80 *mm. embryo, showing the cartilage of the great wing.*

A.T.—Undergoing ossification. E.P.—Is membrane bone forming the external pterygoid plate. If this be traced upwards it will be found to be continued into membrane bone which forms that part of the sphenoid which lies in the temporal fossa.

seen in the 30 mm. embryo, subsequently disappears. It is known as the spheno-ethmoidal cartilage (Fig. 9. S.E.C.).

At this period it is interesting to note that the so-called lesser wing is enormously greater than the greater wing.

Let us now consider the greater wing, or as it is often called the ala temporalis, though that is not a good name. This like the lesser wing is developed quite independently. It is represented in the drawing of the model of a head of a 19 mm. embryo of my own collection (Fig. 5, T.W.), and in the drawing of an embryo of similar length lent by Professor Minot. In Fig. 7, A.T., the greater wing or ala temporalis (T.W., Fig. 5) is seen to contain above its middle a nucleus of cartilage which lies below a nerve marked in the drawing by a light circle. The nerve is the second division of the fifth; all that part which is cross hatched is unchondrified. The greater wing is seen to be connected by connective tissue with a stalk which projects outwards from the corpus sphenoidale. This stalk is known as the processus alaris or lingula (Fig. 5, P.A.). This independent origin of the greater wing is by now well known. The photo-micrograph shows it (A.T., Fig. 10) perforated by the second division of the fifth nerve, connected with the processus alaris (P.A.) by a dark perichondrial sheet.

It apparently has been assumed that this greater wing in course of time extends into the temporal fossa, to form that part of the sphenoid found in the temporal fossa,—but I have shown elsewhere[1] that this is not the case; moreover it has been understood that it grew backwards to enclose the third division of the fifth nerve and the middle meningeal artery. That, however, is not the case. It has also been assumed that it formed a considerable part of the outer wall of the orbit, that part known as the orbital plate of the great wing; that again is certainly not the case. The cartilage of the great wing forms little more than the circumference of the foramen rotundum and the pterygoid process. The statement that the lesser wing is greater than the greater wing in fœtal life is correct, but it must be clearly understood that the statement is applicable only to the cartilaginous condition.

[1] *Anatomischer Anzeiger* and *J. Anat. and Physiol.*

In Fig. 9, which is a drawing of part of the head of a 30 mm. embryo, the greater wing (A.T.) is seen at the floor of the orbit having the appearance of a bent forefinger, holding in its concavity (actually perforated by it) the second division of the fifth nerve. Above it is seen a light quadrate area (marked O.P.), which is the anlage of the orbital plate, but it is formed of connective tissue only.

It has been assumed further that the external pterygoid plate of the sphenoid is preformed in cartilage which has grown down from the greater wing. That, however, is not the case. A glance at the photomicrograph (Fig. 11) shows us the cartilage of the greater wing (A.T.) partly surrounded by membrane bone, and that this membrane bone has grown downwards to form the external pterygoid plate (E.P.).

As has before been said, then, it is clear that the cartilaginous great wing forms but a small part of that part known as the bony great wing.

The processus alaris or lingula, which runs out from the corpus sphenoidale is also chondrified independently, not by outgrowth from the corpus sphenoidale as generally assumed.

A glance at Fig. 5 shows us that between the corpus sphenoidale (C.S.) and the greater wing (T.W.) there is an independent nodule of cartilage, which is marked P.A. This is the processus alaris or lingula.

The dorsum sellæ also arises quite independently, as seen at the 19 mm. stage. This is a condition noticed first by Fischer in the macaque, but so far as I know has not hitherto been so described to man. In Figs. 6 and 4, of which Fig. 6 is drawn from the sphenoid of a 19-mm. embryo, the dorsum sellæ is seen as a transverse bar of cartilage (S.R.), lying one inch behind the pituitary body. In Fig. 4 the same cartilage is seen in section (S.R.), and it forms a round mass placed independently on the basilar plate just behind the pituitary body. To the anatomist this independent chondrification of the dorsum sellæ is of great interest, because it explains a condition met with occasionally in the adult skull. When ossified this bar of cartilage forms the posterior clinoid processes, and they add great depth to the

pituitary fossa; but every now and then one meets with a very shallow pituitary fossa, and the posterior clinoid processes are absent. Gruber has recorded a suture between the posterior clinoid processes and the rest of the sphenoid, showing that they can be independently ossified, and it is quite possible that the condition present in the 19 to 24 mm. stages explains the independent ossification of the posterior clinoid processes. Further, if one suppose that such independent ossification takes place, and that no synostosis follows, then during maceration the posterior clinoid processes become lost, and the pituitary fossa remains flat.

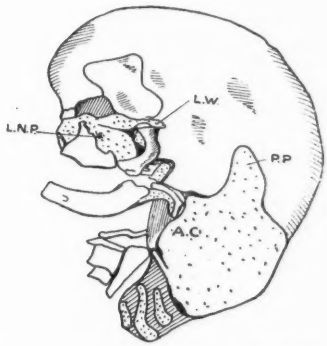


Fig. 12.—*Side view of a reconstruction of the head of a 30 mm. embryo* (BRYCE).
L.N.P.—Lateral nasal process. L.W.—Lesser wing. P.P.—Parietal plate. A.C.—Auditory capsule.

During chondrification of the sphenoid the auditory capsule chondrifies, first around the semicircular canals and vestibule, and later around the cochlea. This is, perhaps, what one might expect, as the cochlea is evolved later than the semicircular canals, moreover it is phylogenetically late in acquiring its coils.

From the cartilage enclosing the semicircular canals and vestibule of the ear a curious process or plate of cartilage is developed (Fig. 12), a process which was first noticed by Spöndli, but has escaped the notice of our English text-books. This process is a forwardly directed plate of cartilage (P.P.) which

partly occupies the place where the parietal bone will be developed, and it is known as the parietal plate. This parietal plate is an exceedingly interesting structure, because it is the posterior moiety of what was in lower types the orbito-parietal commissure which ran continuously from the outer end of the lesser wing of the sphenoid to the auditory cartilage (Fig. 13).

The anterior part of this orbito-parietal commissure is the lesser wing of the sphenoid. In man the great increase in size of the brain has interrupted this continuity. This parietal

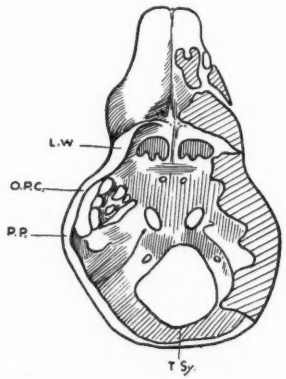


Fig. 13.—*Drawing of the reconstructed head of a mole embryo* (after GAUPP). L.W.—Lesser wing of sphenoid, connected by O.P.C.—The orbito-parietal commissure with P.P.—The parietal plate. T.Sy.—The tectum synoticum.

plate at a later date disappears altogether, as does a great part of the lesser wing of the sphenoid.

Behind the parietal plate there appears a transversely directed bridge of cartilage, which connects the vestibular cartilage of one side with that of the other, and on that account is called the tectum synoticum.

It is of great interest to note that from this tectum synoticum there is directed a small ascending process, which is seen in reptilia (amphibia), but so far as I know has not been seen in birds and fishes. Between the tectum synoticum the two occipital arches of cartilage grow in course of time towards one

another, but they remain separated for a considerable period by a triangular plate of connective tissue or membrane, the spino-occipital membrane. The tectum synoticum is for a time the only part of the cranial vault formed by cartilage.

The ethmoidal region is late in chondrifying, later than any of the other median parts. The ethmoidal plate forms the septum of the nose, and anteriorly sends outwards lateral expansions, which in all likelihood are the lateral nasal cartilages. The remaining lateral walls of the nasal capsules are chondrified independently, and form at the same time the outer wall of the nose and the inner wall of the orbit. By the side of the lower end of the fore part of the nasal septum two small cartilages, the paraseptal cartilages, are developed. These cartilages are otherwise known as the Jacobsonian cartilages. From the outer wall of the nasal capsule there grows backwards, at about the 30 mm. stage, a small process of cartilage known as the lateral nasal process (Fig. 12, L.N.P.), and I think first described by Mihalkovics. It was for long believed to be the anterior remnant of the long-lost palato-pterygo-quadrate bar of cartilage of lower types, which forms to a large extent the maxillary arcade of lower vertebrates. Sutton, in a paper in the *Proceedings of the Zoological Society*, figures such a bar of cartilage as extending from the nasal capsule behind to the malleus behind in a portion of the third month. There is certainly, in my experience, no evidence in favour of such bar existing; it does not even exist in birds.

From the mass of details with which I have troubled you let us evolve some more general statements. We have proceeded through a membranous primordial neuro-cranium and a cartilaginous primordial neuro-cranium, and we have seen that this primordial neuro-cranium, as Kölliker and others thought, is not developed "wie aus einem Gusse," but is formed by independent masses of cartilage appearing at different times; and not only are these cartilages formed at the base of the skull, but they appear at the sides and vault. Nevertheless, the amount of cartilage developed at the sides and roof is small in comparison with the whole neuro-cranium, and, speaking broadly, has diminished in proportion to the increase in size of the brain.

Now let me conclude by thanking you all for your patient endurance of what must have proved a very dry subject for you; and may I also express my warmest thanks to Mr. Stuart Stock for all the help he has given me, without which this lecture would have been impossible; further, to Professor Minot, of Harvard, Professor Bryce, of Glasgow, and many old pupils for the material on which the work was done.

NOTES ON BILIARY AND INTESTINAL SAND.

BY

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I HAVE recently attended two patients both of whom passed gall-stones, and both of whom noticed a quantity of fine gritty sand in their stools for several days and even weeks during the time that the stones were passing. The stones were of the ordinary type, facetted, varying in size from a hemp seed to a pea, and composed almost entirely of cholesterin. I learnt that several table-spoonfuls of sand were passed in one case, but much less in the other. There was no pain or other special symptom attending its passage. The clinical history is briefly as follows:—

Dr. A. is a medical man of middle age, engaged in active practice, and has always enjoyed good health. In October, 1909, he had an attack of biliary colic, which lasted an hour or two, and was accompanied by vomiting. In December another attack came on one Sunday evening while he was at church, and a slight one followed on the Tuesday. In January the colic returned with slight jaundice, vomiting and some pyrexia, and in February a final attack, after which three calculi the size of a pea and others smaller were passed. The calculi were somewhat soft, and broke when handled. During this last attack the sand was noticed sinking slowly to the bottom when the stools were mixed with water. It disappeared about a week after the last stone was found. There has never been any colitis, and the bowels have always been regular with a slight tendency to looseness. The patient is now, I am glad to say, in perfect health.

Mr. B. is an elderly gentleman who formerly led a very active life. He is a total abstainer and a moderate eater, though fond of fruit. The bowels tended to be constipated, and the patient's general health has been excellent. He first felt the biliary colic at Christmas, 1908. In the July following he had four more attacks, and one in November. In December a slight one occurred and was followed by jaundice. At the beginning of January, 1910, in a fresh attack of pain his temperature rose to 104°, with vomiting, rigors and jaundice and considerable prostration. On the 14th nausea was complained of, then rigors and vomiting, during which he brought up two calculi. During the next fortnight seventy-four stones, with a large quantity of sand, were found in the stools. The sand was at first light in colour and coarse or gravelly, but it was afterwards dark and finer. Slight colic with jaundice recurred from time to time for six weeks, till in all 112 stones were passed. The sand continued to appear most of the time. The tenderness over the region of the gall-bladder, which had been present throughout, now disappeared. Since then the patient has had no further relapse or any other symptoms.

The composition of the sand in both these cases rather surprised me. It would be natural to suppose that sand passed at the time of the expulsion of gall-stones in otherwise healthy persons, and apparently only at that time would be composed of substances from the biliary passages; but this sand contains neither cholesterin, bilirubin, or bilihumin-calcium. These substances are the material of true biliary sand, and are sometimes seen in a finely granular condition in or near the bile passages. Biliary sand, indeed, is often spoken of, and sometimes referred to as being passed per anum, but I have failed to find any detailed account or analysis of it when thus passed. Naunyn, too, is quite sceptical about the "gall sand" of various writers, and thinks it unlikely that such biliary sand could pass down the intestine without being broken up. (*Cholelithiasis*, p. 85.)

He goes on to tell a story of someone who undertook to send him specimens from six different patients, but the sand turned out to be only vegetable debris. Our specimens, on the other hand, show no vegetable cells or characteristic structures, and the inorganic matter in the portion analysed amounts to 20.7 per cent., and proves to be calcium phosphate with traces of sulphate and carbonate. (Drs. Roberts and E. R. Short.)

Dr. E. Emrys-Roberts reports as follows :—

"The appearances and reactions are similar in both cases. The sand consists of irregular, amorphous, reddish-brown masses of a pronounced degree of hardness, which when washed and dried in the air appeared as a fine, gritty, deep reddish-brown sand. Under low power there was no evidence of crystalline formation, the outlines were irregular.

"When extracted with ether there was no deposit of cholesterin crystals, and the substance gave none of the reactions of altered blood. When washed and treated in the cold with dilute caustic soda a yellowish solution was obtained, but this solution did not give Gmelin's reaction for bile-pigment with fuming nitric acid, nor yet the blue colour which this reagent produces in the presence of bilihumin. The test for bilirubin with dilute tincture of iodine was also negative. When treated with concentrated hydrochloric acid under a cover-glass bubbles of gas were seen to be evolved, but solubility was extremely slow. This reaction took place with both concentrated sulphuric acid and strong nitric acid, but not with glacial acetic acid. In the organic residue no evidence was seen of a cellular basis.

"When the organic constituents were removed by combustion the inorganic residue appeared of a pearly, bluish-white colour, the particles being fragile, not altered in shape, but probably in size. The difficulty of being certain on this point is obvious.

"A portion of the original substance was treated with acetic acid, and the filtrate shaken up with ether. The latter did not become tinted a pink shade but remained colourless."

The substance, then, is clearly not the same as the hard, granular, blackish material composed of bilirubin or bilihumin-calcium which forms true biliary sand, but it corresponds very nearly to one type of intestinal sand as described by various writers.

Intestinal sand of any kind is rare, but most writers hold that there are two distinct forms. The first has a vegetable basis, due to sclerenchymatous particles in the fruit of the pear, the banana or the pea. On examination, there are sometimes seen to be woody cells, in the thick walls of which are channels running

from the cavity to the surface. The inorganic matter is usually only 2 or 3 per cent. Marcet wrote about this pear sand as long ago as 1817. Robin and Laboulbène[1] in 1873, in reporting six cases, showed that in one at least the substances consisted of definite vegetable cells with an incrustation of lime salts. Shattock[2] and others have reported similar instances. In a case of Thomson's[3] the sand could be produced at will by giving pears in the food, and it disappeared if they were left off.

The second form of intestinal sand has no vegetable skeleton, and contains a much greater quantity of inorganic matter. Thus Mathieu and Richaud[4] give two instances with about 60 per cent. of lime salts. Thomson and Ferguson[5] one of 71, Monjour[6] one with 70 per cent. of lime and magnesia, and one of Dieulafoy's[7] cases had a similar composition. Duckworth and Garrod[8] found 61 per cent. of calcium phosphate, Marquez[9] a specimen as low as 28. We need not include the minute crystalline bodies mentioned by Schönlein[10] and Bellingham,[11] but generally this type of sand is formed of hard grains made up of calcareous salts and more or less homogeneous organic matter. Eichorst thought the latter was composed of crystals of fatty acids in one case. Bedford[12] says that the percentage of inorganic matter is usually from 28 to 70 per cent.

Duckworth's description of the sand shows many points of resemblance to that passed by my patients. It was, he says, of a deep brown with a mixture of pale particles. The granules were of various shapes, none of them crystalline or cellular. Treated with an acid, the hard sand gave off bubbles, and left an organic base soluble in alkalies. A pink colouring matter could be extracted, and the spectrum of urobilin was detected. There was very little unaltered bile pigment. He concludes that it is formed in a part of the intestine where the bile pigment is already largely broken up and changed to urobilin. As the large intestine appears to excrete a considerable amount of calcium and magnesium, the inorganic matter may thus be independent of the food.

Now the clinical history of patients who pass this type of sand is frequently that of mucous colitis, or of an intractable diarrhœa without mucous casts of the bowel. Sometimes a gouty history

is recorded, and French writers have claimed a special lithiatic diathesis; but in some, as in a case of Dietz[13] in 1901, there is no history of either diarrhœa or gout, and occasionally there has been constipation. Duckworth says two-thirds of the cases have been in women, and the average age is 35 years. Dieulafoy and others have found it in children who suffered from constipation, and in them, as in adults, the discharge was often preceded by attacks of colic. Emerson[14] thinks it is the result of a secretory neurosis of the intestine. It occurs in neurasthenic patients, and frequently accompanies membranous colitis. The stools are often preceded by an hour of severe pain.

Owen Williams[15] has shown that this sand, besides the inorganic basis, contains fatty acids and soap, the fats being of the stearic or palmitic type, and he notes the prevalence in his cases of colicky pains and various forms of colitis. He thinks that it is due to some abnormality in the digestion of these fats, and the production of calcium salts of saturated fatty acids. He has been able to show that an isolated loop of bowel or the appendix will sometimes excrete fat of this type, and even form concretions of it in the appendix. In one patient who passed this intestinal sand many very small, brownish-red granules were found actually in the bile passages and the neighbouring parts of the intestine when he was operated upon, and these granules also contained fat. Moreover, Williams found that the excretion of sand could be prevented by giving olive oil in place of ordinary fat in the food. His view, therefore, of true intestinal sand is practically that of Nothnagel, *i.e.* that it is due to a lithogenic catarrh, and he confirms the observations of Eichorst and Roesser[16] that the sand contains fat. In the case of one of my patients an analysis by Mr. O. C. M. Davis, B.Sc., gave the following result :—

The specimen was washed, dried and extracted with ether in a Soxhlet's apparatus, and gave 7.1 per cent of fat. The residue, after extraction of fat, was treated with hydrochloric acid, taken to dryness, and again extracted with ether, giving 4.1 per cent. extract, which consisted partly of free fatty acid, as far as was possible to judge from the small quantity available.

Myer and Cook [17] take a different view, denying the distinction of the two types. They think that both forms have a vegetable nucleus, and when this is retained long in the bowel it is coated with lime. To explain the seemingly frequent combination with mucous colitis and dysentery, they point out that it is chiefly in such cases that the stools are examined. Their own patient had chronic constipation. The sand proved to be due to bananas, and could be produced at will by giving one or two bananas a day. They find that the cells of the milk tubes in this fruit are arranged in rows, and contain balls of resin with a fluid rich in tannin. These balls when hardened formed the sand, as Edes and Bates [18] had previously shown in other cases of banana eaters.

In one of my patients I have evidence that no bananas were eaten at the time of the excretion of sand, and that very few were taken by the other person.

If we are inclined to accept Myer and Cook's view of this external origin of all intestinal sand, why do not lime salts commonly incrust various nuclei in the fæces in ordinary constipation? The stools are certainly examined far too often for it to be passed unobserved. I think that the weight of evidence is altogether in favour of the true sand generally occurring together with some kind of intestinal catarrh, and the only difficulty is to understand why it is so rare in cholelithiasis, for in that condition there is certainly a catarrhal state not confined to the bile passages.

We know that an excretion of lime takes place from their mucous lining, and is a factor in the formation of the bilirubin calcium nucleus of most gall-stones, and that this excretion is probably increased in catarrhal states, and renders possible the deposition of cholesterin. It may be that sand is only formed, as Williams suggests, when there is also a perverted digestion of fats leading to the formation of the organic matrix or a calcium salt of certain fatty acids.

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[17] Myer and Cook, *Am. J. M. Sc.*, 1909, cxxxvii, 383.
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NOTES ON A CASE OF OXYCEPHALY.

BY

G. HELY-HUTCHINSON ALMOND, M.B., M.A.Oxon.

J. D., a male child, was born on October 22nd, 1908. His mother was then 34, and had previously given birth to seven normal children, four girls and three boys, the youngest of whom was a girl, 1 year and 7 months old. All the children are now alive and well. At the time of writing—May, 1910—another girl has just been born, and she appears to be quite normal.

There is no history of syphilis in either father or mother. The former, at the time of birth, was suffering from a sinus in the lower jaw, the result of necrosis; this has now quite healed. The mother has never suffered from vaginal discharge, and has had no miscarriages. She has breast-fed all her babies for the normal period.

Four months before the birth of the patient the mother received a severe fright on seeing a burning child, and to this fact she attributed the deformity. The confinement was attended by a midwife. Though the labour only lasted seven hours, the head was rather slow in being born. The baby was not weighed, permission being withheld by the parents, but it was estimated

to be about 9 lb. The skin was natural in colour and texture. It was brought up to me to see on account of the shape of its head.

The forehead had a characteristic dome-shaped appearance, rising abruptly from the orbital ridges. The anterior fontanelle was open, the posterior much so. There were large temporal bulgings on each side, and the antero-lateral fontanelles were widely patent. Proptosis was marked, and there was some ectropion. When five weeks old the occipito-mental circumference of the head was 17 inches, and the occipito-frontal 15. If callipers had been used to measure, the occipito-frontal diameter would have been comparatively very much less, as the tape, in taking the circumference, had to pass over the temporal bulgings.

The lateral aspects of the forehead are now very much bossed, and the frontal suture runs up between them as a shallow depression. The anterior fontanelle is just open. The posterior fontanelle is closed, but close to it the left lambdoid suture is widely open, and through it proceeds an encephalocele about 1½ inches in diameter. The temporal bulging on the right side is now closed over with bone, but on the left there is the considerable diamond-shaped opening of the fontanelle. Both postero-lateral fontanelles only just admit the pulp of the finger. The following is a table of measurements taken at various times :—

	Nov., 1908.	*May*, 1909.	*May*, 1910.
Occipito-frontal	15	17½	19
Occipito-mental	17	18	24½ [1]
Level of eyes	—	19	22
From ext. aud. meatus of one side over vertex to other side	—	15½	16

The eye sockets are very shallow. A considerable portion of the roof of the orbital cavity, which is much more vertical than normal, can be easily palpated without displacement of the eyeball. Exophthalmos has been marked since birth. Dislocation of either eyeball occurs occasionally when the child cries. During

[1] Partly accounted for by enlargement of cephalocele.

the first year no squint was observed, but for the last six or seven months the child has been fixing with his right eye, whilst the axis of the left eye points a little downwards and outwards, and this tendency is increasing. Vision is good, and the child can easily distinguish people in the gardens at the opposite side of the road, *i.e.* at a distance of about forty feet. Nystagmus has never been found. The eyelids at times cover the eyes when the child is asleep, but at other times closure is imperfect, especially when the child has had an attack of chemosis, a not infrequent event. These bouts are always associated with conjunctivitis, and once the chemosis in the left eye was so severe that in order to relieve tension the conjunctiva had to be punctured. The discs are natural. The bridge of the nose is depressed.

The palate is very highly arched, so much so that it is impossible for the index finger to reach the apex of the arch. The upper jaw is rather contracted, the central portion containing the incisors being somewhat bowed out as a buttress. Two teeth were cut before three months, and the remainder of the sixteen before one year. The upper incisors are rather crowded together.

The chest is fairly well developed. The heart is natural, and the lungs are sound. The abdomen is natural, the limbs are thin and flabby. The child is unable to walk, and has only recently been able to stand with support.

In December, 1909, the baby had measles, followed by a sharp attack of bronchitis. In March, 1910, he woke up one afternoon from sleep, began to sweat, vomited and followed this up with tonic and clonic convulsions. The fit was followed by another bout of bronchitis.

The accompanying photograph, kindly taken for me by Mr. H. K. Pvyke, shows the patient taken with his eldest sister (age 15). It is interesting to compare the measurements of their heads.

Patient	.. O.M.	24½;	O.F. 19.
Sister	.. O.M.	25¼;	O.F. 21¼.

The ætiology of the condition is uncertain. I do not attach any importance to the mother's fright.

Case of Oxycephaly.

Carpenter[1] shows that for congenital heart cases the theory of maternal impressions does not hold water, adducing as proof that the fœtal heart is in miniature perfectly formed seven weeks after conception. Unless of course, as is quite possible, the cause of the condition had been at work before the end of the fifth month, his remarks as regards the present case can only be of indirect value.

The malformation has been ascribed to intra-uterine meningitis, which is supposed to cause early union of the sutures. There is no evidence in the history of the mother to prove this, but it is, at the same time, impossible to deny its existence.

There is, however, in this and in other cases evidence of the early union of some at least of the sutures, and the well-marked frontal groove in the present instance bears this out. The early appearance of the teeth I consider brings up the possibility of some hyperactivity of the osteoplastic tissues.

The early union of the sutures, especially of the coronal and sagittal, leads in some cases to a microcephalic oxycephaly, such as was described in one of Mr. Power's cases,[2] or depicted in one of Dr. Morley Fletcher's cases.[3]

In other cases, such as in my own, some of the fontanelles and sutures—the points of weakest resistance—have apparently yielded to the increased pressure put upon them, and this has led to the formation of encephaloceles, and at the same time has possibly indirectly paved the way for an accompanying hydrocephaly.

The malformation of the orbit is generally supposed to be due to synostoses affecting the base of the skull.

Mr. Beaumont has seen the child with me several times, and has already alluded to it in the *Transactions of the Ophthalmological Society*.[4] To him I am indebted for several valuable suggestions.

[1] *Proc. Roy. Soc. Med.*, Child. Sect., 1909, ii, 277.
[2] *Tr. Ophth. Soc. Lond.*, 1894, xiv, 212.
[3] *Proc. Roy. Soc. Med.*, Clinical Sect., 1909, ii, 115.
[4] *Tr. Ophth. Soc. Lond.*, 1910, xxx, 47.

IODOFORM AND THYROIDISM.

BY

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THE conclusions which I hope to establish are these:

1. That iodoform, when absorbed by the system, either from a wound or from the bowel, is excreted into the blood by the thyroid gland as iodothyrin, which is the active principle of the colloid of that gland.

2. That an excessive quantity will produce symptoms of acute thyroid intoxication.

Both the above appear to be thoroughly accepted by the modern school of physiologists and pharmacologists. I hope to add a third conclusion, which as far as I am aware has not previously been recorded.

3. That in the susceptible person iodoform may precipitate an attack of *chronic* thyroid intoxication, namely exophthalmic goitre.

It was demonstrated so long ago as 1896, by Baumann, of Freiburg, that the colloid of the thyroid gland contained far more iodine than any other organ in the body. This has been abundantly confirmed by every subsequent observer. The amount varies a good deal in different species. In herbivores it is abundant; in carnivores it is very scanty. This is probably a question of diet. Most vegetables contain iodine, but in the animal body it is present only in the thyroid (with the exception of occasional mere traces in the blood). In young children it is scanty, in some cases falling below our none too accurate means of estimation.

The iodine is an essential constituent of the active principle of the colloid. It has been proved, both by Roos and by Hunt and Seidell[3] (working in the U.S.A. Public Health Laboratory),

that the activity of the colloid varies with the percentage of iodine. The relationship is so definite that leading manufacturing houses now standardise their thyroid extracts for therapeutic purposes by the iodine content, which should not fall below 0.2 per cent. of organic iodine.

Deprivation of iodine is a cause, probably the only cause, of parenchymatous goitre. It has been shown in North America that in some districts remote from the sea the vegetation is unusually deficient in iodine, and there was very serious commercial loss amongst sheep farmers by reason of the number of cretin lambs. Many of the sheep and dogs were goitrous. The introduction of iodiferous salt was completely successful in preventing this. Previously a pure rock salt had been used.[4]

I suggest that the success of Chalmers Watson and of Edmunds in producing goitre in fowls by limiting them to a meat diet was the result of iodine starvation.

The causation of human goitre has long been a problem of great interest. We know that it is in some way related to the drinking water. Goitre follows particular geological formations: in England the carboniferous limestone and upper lias, in Switzerland the molasse. For centuries certain wells on the continent, called Kropfbrunnen, have been known to yield a water that would cause goitre in men and animals, and they have been largely patronised by young men anxious to escape conscription. I have lately discovered a goitre well in Gloucestershire which has caused the disease, to my knowledge, in three or four of the very few persons who have drunk of its waters for any length of time.

In Khokand, Turkestan, a very large proportion of the whole population suffer, and Russian soldiers stationed there rapidly acquire the disease. Changing a water supply will sometimes induce or abate an epidemic of goitre. Thus at Rupperswyl, near Aarau, 59 per cent. of the children were goitrous. In 1884 the water supply was changed, and in ten years the percentage of goitrous children had fallen to 11.

It is a noteworthy fact that boiling the water will abolish its remarkable power. This has naturally led to a germ theory of

the origin of goitre, but all attempts to find the organism have failed. It is not very probable that a germ should be distributed in particular geological horizons very widely separated from one another. A chemical theory is made much more probable by the analogy of animal experimentation. The water is still active after passing through a Berkefeldt filter. Moreover, in goitre the colloid is extraordinarily deficient in iodine, and in early cases iodides will effect a cure.

Naturally attempts have many times been made to find that the waters of goitre wells are deficient in iodine, but they have usually proved to contain a normal amount; and, indeed, this might have been foreseen. We get most of our iodine from vegetables, not from drinking water. The writer advances the tentative suggestion, shortly to be put to the proof, that the water of goitre wells contains traces of some metal which forms an insoluble, inert compound with iodine in the blood, so, as it were, stealing it from the thyroid gland. Boiling the water precipitates the metal as an insoluble carbonate. It would be mere guessing to mention names of metals, but either lead or silver, amongst many rarer, might meet the indications. If the chemical theory is correct, the water of Kropfbrunnen should cure exophthalmic goitre, in which the iodine content of the gland is excessive.

Why should the thyroid enlarge when the iodine supply is small? Manifestly to obtain a larger blood supply, to make better use of what iodine it can obtain. Similarly one kidney enlarges when the other is removed in order to capture a larger quantity of urea for excretion, and dwellers on mountain-tops increase their red blood corpuscles to make the best possible use of the attenuated supply of oxygen. It is interesting to note that both Halstead and Edmunds have proved that bitches deprived of most of their thyroids have litters of goitrous pups, and that of 2,333 cases of congenital goitre in man collected by Fabre and Thevenot the mother was almost invariably goitrous.[5] The fœtus was supplied with nutriment deficient in iodine, and became goitrous in the attempt to obtain more.

Iodides and iodoform increase the amount of iodine in the

thyroid colloid, with a corresponding increase in its physiological activity. This has been proved in man by Oswald, and in dogs by Hunt and Seidell.

Now, the secretion of the thyroid is poured, not into a duct which carries it away, but into the blood stream. When strychnine is given to a patient it is excreted by the kidney, and ceases to exert any physiological effect; but the secretion of the thyroid does exert a physiological effect, and if over-secretion is stimulated by an excessive supply of iodiferous compounds, it is natural to expect symptoms of thyroidism.

The constitutional symptoms of iodoform poisoning are due to acute thyroidism. Iodoform has been recognised to cause trouble in four ways. It may give rise to—

1. Dermatitis, erythema or other rashes.
2. Toxic amblyopia (five cases) or optic atrophy (one case).
3. Haunting with the smell and taste of the drug.
4. Acute thyroid symptoms.

An overdose of thyroid extract causes rapid pulse, headache, restlessness, nausea, and delirium; in a few cases exophthalmos has been obtained. The picture is thus very like that of Graves's disease.

I have collected about 100 cases in which iodoform is said to have caused a similar clinical picture—rapid pulse, delirium, headache, vomiting, and occasionally fever.[6] The leading pharmacologists now agree in attributing these effects to acute thyroidism. The condition is not easy to diagnose; it is quite unlike the ordinary types of drug poisoning, and may be confounded with the symptoms of septic absorption. Probably some of the cases were not genuinely iodoform poisoning. When, however, there has been a very rapid pulse with a normal temperature, and the patient has been haunted by the smell and taste of the drug, there can be no room for doubt.

In some cases enormous quantities of the powder had been applied to wounds, one, two or even three ounces at a time. It is remarkable, seeing how frequently iodoform is used as a dressing for chronic tuberculous sinuses in children, that nearly all the recorded cases are in adults.

In susceptible persons iodoform may light up an attack of chronic thyroidism, that is of exophthalmic goitre. One such case has come under my notice.

Case.—A middle-aged lady was treated for a carbuncle in the perineum, which was dressed by a medical practitioner and a nurse with very ordinary quantities of iodoform. During three weeks about half an ounce of the powder was dusted on, and altogether about 40 inches of narrow iodoform packing gauze were used. The carbuncle healed well under this dressing. For weeks after the cessation of treatment she continually complained that she could smell and taste iodoform, though there was in reality none in the house. She went to the South of England to recoup her strength three or four weeks later, and stayed ten days. On her return she was noticeably ill; there was great emaciation, she was nearly two stone below her normal weight, the pulse was always 120 or more, the thyroid was moderately enlarged, tremor was marked, and she was exceedingly nervous and restless. There was no exophthalmos. I formed the conclusion that it was a case of Graves's disease, and Dr. Michell Clarke, who kindly saw her in consultation, made the same diagnosis. It is interesting to note that she had had a "nervous breakdown" fifteen years before, which prostrated her for two years, and in which the pulse rate was persistently quick. This may have been a similar attack.

The onset of the present illness was in January, 1909. There has been very slow but decided improvement, and now (April, 1910) she is almost well, but has to lead a very quiet life.

I connect this case with the use of iodoform because—

(*a*) The trouble followed soon after the application of the drug, although it was not diagnosed for about a month.

(*b*) She undoubtedly suffered from iodoform poisoning, because the smell haunted her long after the drug was omitted.

(*c*) Iodoform is proved to cause hyperthyroidism of the acute type, and it is therefore reasonable to suppose that in a susceptible person chronic thyroidism might be produced. It is almost universally recognised that Graves's disease is due to a chronic hypersecretion of the thyroid. The gland in this disease usually has an abnormally high iodine content.

Practical Deductions.—Iodoform should be used sparingly on absorbing surfaces, especially in adults. It should be avoided if there is any reason to suspect a tendency to exophthalmic goitre. The treatment of early cases of parenchymatous goitre

should be directed to altering the drinking water and to introducing iodine. It would appear, since iodoform causes thyroidism more readily than iodides, that iodine ought to be given to such patients in organic combination. In the treatment of exophthalmic goitre iodine starvation should be worth a trial. This could be effected by a meat diet, and possibly by giving the water of a goitre well. It is only right to say that the writer has not had an opportunity of putting the suggestion to the test.

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[3] HUNT and SEIDELL, "Studies on Thyroid," *Hygienic Laboratory Bulletin of Public Health*, No. 47. Washington, 1909.

[4] MARINE, *Johns Hopkins Hosp. Bull.*, 1907, xviii, 359.

[5] FABRE and THEVENOT, *Rev. de Chir.*, June 10th, 1908.

[6] See, for instance, Cutler, *Boston M. & S. J.*, 1886, cxv, 73, 101, 110. A large number of cases of iodoform poisoning are here set forth; some are not very convincing. I have found many subsequent records of other cases.

A CASE IN WHICH A STONE FORMED IN THE URETHRA AROUND A PIECE OF WOOD INTRODUCED INTO THE URETHRA TWENTY-SIX YEARS BEFORE THE REMOVAL OF THE STONE.[1]

BY

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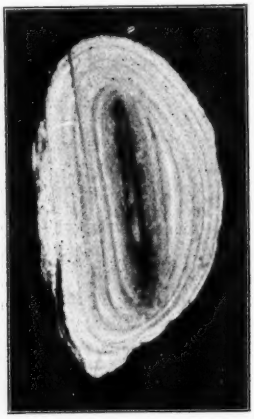
IN July, 1909, I was asked by Dr. A. Peake to see a man, aged 48, who had a sinus in the perineum. When a probe was passed along this it struck a stone in the urethra. The history of the case was a very remarkable one. Twenty-six years before we saw

[1] Specimen shown at a meeting of the Bristol Medico-Chirurgical Society, March 9th, 1910.

him he had retention of urine, and in order to relieve himself he passed a kind of bougie which he made of wood. The end of this broke off in his urethra, but curiously enough it did relieve the retention. The broken-off end of the wooden bougie, however, remained in the urethra. He had had difficulty with micturition at times since, and had kept in the house a No. 4 metal catheter, which he passed when the difficulty was marked. In doing so, he told us, he struck the piece of wood. He really struck the stone, but knowing nothing about stones in the urethra, he imagined it to be the piece of wood. A few weeks before we saw him a sinus formed in the perineum, and Dr. Peake had opened another abscess there a few days before we saw him together. There was a large mass of induration in the perineum, more to the right than the left. In this was the earlier sinus and Dr. Peake's opening. Pus and urine flowed from both. A No. 3 silver catheter passed into the bladder, but with considerable difficulty. It grated over the stone. The urine was purulent but not offensive.



A few days later I removed the stone. The mass of induration was very largely due to the size of the stone. It lay in a pouched urethra, distinctly more to one side of the middle line than the other. On cutting open the stone a piece of wood was discovered as its nucleus. This seems to have been prepared by nature for photographic purposes. Some constituent of the urine had stained its outer layer red, and this has, of course, come out as a black line in the photograph, as if the piece of wood had been drawn in with ink. The photograph represents the stone one-eighth of an inch larger than it is. My efforts to get it exactly the actual size were unsuccessful.

BROMOFORM POISONING.

BY

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BROMOFORM, first produced by Nunneley and Suchard about the year 1840, by the action of bromine on alcohol in the presence of an alkali, was, some twenty years later, tried by Rabuteau and others as a general anæsthetic, but does not appear to have been used much for this or for any medicinal purpose until, in 1889, S. K. Stepp,[1] of Nuremberg, advocated it as a remedy for whooping cough.

He related a series of sixty-five, which in a second communication he brought up to a hundred, cases treated by this drug with most satisfactory results, claiming that it had a very decided influence in cutting short the disease and in preventing complications, the longest time taken for complete cure being four weeks, and that, in no instance, did any disagreeable effects follow its use. He credited the drug, also, with considerable prophylactic power.

This opinion as to its utility in whooping cough was speedily confirmed by Neumann, Fischer, Löwenthal, Cassel, Burton-Fanning and many other investigators.

Fischer,[2] after using it in fifty-one cases, came to the conclusion that "there is no question that it is the best known remedy when properly applied;" whilst Löwenthal,[3] who treated by this means a hundred children in Professor Senator's clinic in Berlin, regarded its action as "almost specific," at all events if used from the commencement. But both he and Burton-Fanning, who, from an experience of thirty cases, considered the remedy a very valuable one, drew attention to the occasional occurrence of toxic effects.

Bromoform, whose chemical formula is represented by $CHBr_3$, has the same composition as chloroform and iodoform,

with the chlorine and iodine radicles, respectively, replaced by bromine. It is a colourless, mobile liquid with a sweet taste and an odour which, though recalling those both of chloroform and iodoform, is rather pleasant than otherwise. The specific gravity is 2.83; it is freely soluble in alcohol, ether and almond oil, less soluble in glycerine (1 in 80) and only slightly in water (1 in 800). When exposed to sunlight it decomposes and becomes yellow from liberation of bromine.

Its great weight and its slight solubility in water render it a difficult drug to dispense, as in any mixture containing water, or even mucilage, bromoform, being heavier than either, will sink to the bottom. Even when six minims are dissolved in six drachms of rectified spirit and water is gradually added up to six ounces, the mixture being well shaken after each addition, a considerable quantity of the drug will be found, after standing, as a deposit at the bottom of the bottle.

The doses which have been prescribed have varied considerably. The German pharmacopœia of 1900 gives .5 grammes (about 3 minims) as the maximum single and 1.5 grammes as the maximum daily dose.

Stepp recommended five to twenty drops in twenty-four hours in very frequent doses, and, in his second communication, one drop three times a day to children from three to four weeks old, four or five drops three or four times a day to children from two to three years, and six to seven drops three or four times a day to children above seven.

It must be borne in mind, in connection with these doses, that there are about eight "drops" of bromoform, according to the measurements decided upon at the International Congress for the Unification of Pharmacopæial Formulæ of Patent Drugs and Preparations, held at Brussels in 1902, to a minim.

Löwenthal gave from two to five drops three times a day. Fiertz[4] for children under ten, recommended as many drops as the child had years of age, plus two, every six hours; and Marpan,[5] in children under five, gave four drops daily for each year of age, and in older children twenty drops daily, and advised gradually increasing the doses till they were doubled.

Burton-Fanning advised half a minim three times a day for children under one year, one minim for children between one and three, and two minims for those between three and six, these doses being gradually increased till doubled.

More recently Voelcker[6] says that, in whooping cough, "bromoform in doses of five minims is sometimes useful," whilst Parkinson[7] finds that the paroxysmal attacks are greatly lessened in severity and vomiting, if previously present, is entirely prevented by doses of from one-eighth to three quarters of a minim.

Instances of poisoning by this drug fall into three groups.

In the first are those in which, either wilfully or by misadventure, a very large amount has been taken at one time; in the second, those in which toxic symptoms have followed the administration of the *last dose* in a bottle of mixture containing it; and in the third, those in which apparently only the quantity that has been prescribed has been taken.

Those in the first group are mostly children who, liking the sweet flavour of the drug, have gained access to the medicine bottle and freely indulged their taste.

Thus Dwelle records the death of a child two years old who, whilst taking two drops of bromoform every four hours, obtained the bottle and drank about half its contents, in this way taking from thirty to forty drops of bromoform at one dose. Medical assistance could not be procured for an hour and a half, and at the end of that time the child was quite insensible, with dilated pupils and breath smelling strongly of bromoform; no pulse could be felt, and the heart sounds were not audible. Despite strychnine and whisky hypodermically, lavage, and artificial respiration, the child died about three hours later.

Tresling reports the death of a child, aged four years, seven and a half hours after a drachm of bromoform was given to it by mistake, and other fatal cases are recorded by Nauwelaers, Leurns and Müller.

Darling records a case of recovery in a girl of six after taking one and a half drachms of pure bromoform. The stomach was washed out for an hour and a half until the washings were quite free from the odour of bromoform, and sal volatile and strong

coffee were administered by rectum and through the stomach tube.

Similar examples are related by Sachs, Pannwitz, Nolden (two), Schliepers, Börger (two), Bömmel, Czygan and others.

Cases in the second group, namely those in which symptoms of poisoning occur after taking the *last dose* of a mixture containing bromoform, are described by Dean, Stone, Evans, Burton-Fanning (four cases), Stokes (two cases), Benson and Langdon. In all of these recovery took place; but in 1898 an inquest was held at Lancaster on a girl, aged five years, who died after swallowing the last dose of a mixture which had contained thirty-six minims of bromoform in mucilage and water. The inquest is referred to in the *Lancet* of 1898, but further details were not forthcoming.

In the case described with much humour by Stone, a child of two was left for dead all night (according to another practitioner who was summoned, of "black diphtheria"), but eventually recovered so rapidly that in a few days "she whooped as loudly as ever."

The writer began to use bromoform in the treatment of whooping cough in 1902 whilst resident medical officer at the Royal United Hospital. The results were found to be decidedly superior to those attained by the use of the remedies in common use, especially in diminishing the number and violence of the paroxysms and in checking vomiting. A noticeable feature, too, in this and in later experience has been the rarity of bronchial and pulmonary complications, though as the frequency and severity of these vary so greatly in different epidemics, this impression, received from data so unreliable as those of out-patient practice, may be erroneous.

In January, 1903, bromoform was prescribed, amongst others, for three children of German parentage. The drug was dispensed in a mixture which went by the name of mistura bromoformi, prepared by adding bromoform dissolved in spirit and glycerine to mucilage and water. It fell to the lot of the eldest child, a boy four and a half years old, taking rather less than one minim three times a day, to have the last dose out of a bottle common

to the three. Almost immediately he became faint and ill, vomited and turned very drowsy. When seen neary an hour later he lay completely unconscious, breathing stertorously with eyes closed, contracted pupils and rapid, feeble pulse. His breath and the vomited material both smelt strongly of bromoform. The stomach was thoroughly washed out until the washings were free from the smell of bromoform, stimulants were administered, and in about four hours the boy had recovered consciousness and was able to return home. Although the importance of thoroughly shaking the bottle before each dose was emphasised in this, as it was in every case, it was thought probable at the time that, in consequence of the mother's imperfect acquaintance with the English language, she had not comprehended the directions given, though this she strenuously denied, declaring that she had never omitted to do so.

However, in view of the possibility of another such accident, the use of bromoform in the out-patient department was discontinued until during a rather severe epidemic of pertussis in 1906, as no remedy seemed so efficacious in controlling the disease as bromoform had been, and it being learnt on consultation with our hospital dispenser, Mr. Snow, that a very satisfactory emulsion could be obtained by the use of tincture of senega, as recommended in Martindale and Westcott's *Extra Pharmacopœia*, the use of the drug was resumed, and it was employed in a large number of cases without any unpleasant effects arising until the following case occurred.

A little girl, five years old, attended hospital on March 17th, 1910, suffering from moderately severe, uncomplicated whooping-cough. A teaspoonful (containing nearly one minim of pure bromoform) of a mixture made according to the following formula—

Bromoform	.. ..	ʒ xi ♏ 44
Tr. Senegæ	.. ..	ʒ iii ss.
Spt. vin. rect.	..	ʒ i
Syr. Aurantii	..	ʒ iv
Aq. ad	.. ..	ʒ xliv

was prescribed, to be taken three times a day. On March 24th the child was, according to the mother, better, but for three or

four days had complained of pain in the front of the neck. Nothing abnormal was to be seen inside the throat, but a very distinct soft uniform enlargement of the thyroid gland was discovered, slightly tender on manipulation. Red iodide of mercury ointment was given to be rubbed into the swelling once a day, while the bromoform mixture was repeated. On March 31st the thyroid swelling was less, and the child was progressing satisfactorily. A fresh bottle of the mixture was prescribed, and a dose was given about 2 p.m. The child then went, as was her custom, to lie down. About 6 p.m. her mother found her sleeping very heavily, and when with difficulty she was aroused she vomited and staggered about. After this she again became very drowsy, and Dr. Heathcote was summoned. He found the child quite insensible, and diagnosing the condition, from the history and symptoms, as one of bromoform poisoning, immediately dispatched the patient to hospital, and very kindly telephoned to me, so that I was able to see the child very shortly after her arrival there. She was then deeply unconscious, colour fair, lips bluish, pupils contracted but not pin-point. There was very marked flaccidity of the skeletal muscles; the corneal, patellar and plantar reflexes could not be obtained. There was a faint sweetish ethereal odour to the breath; pulse 120, temperature 96° F. The condition bore a striking resemblance to that of a child in a state of chloroform anæsthesia.

Although it was some six hours, according to the mother's statement, since the dose had been taken, it was thought advisable to wash out the stomach. As the tube passed the larynx it excited coughing and two or three distinct "whoops." The stomach was empty and the washing clear and odourless. Strychnine was administered hypodermically and the rectum washed out, and consciousness was soon regained, and on the following day the child seemed none the worse for its alarming experience.

The explanation of the poisonous effect of the drug in this case is not clear, and unfortunately the remainder of the bottle could not be obtained for analysis. There seem, however, to be three possibilities: first, that there was an idiosyncrasy to the

drug ; secondly, that a quantity greater than that supposed was taken ; and thirdly, that the medicine had decomposed.

The first seems to be negatived by the fact that the girl had already taken the medicine for a fortnight without showing any special susceptibility thereto, unless, indeed, the enlargement of the thyroid is to be regarded as the expression of a reaction against the drug rather than against any other poison.

The second appears unlikely. Several other children were supplied from the same stock bottle without any untoward effects accruing, whilst the mother was sure that the child only had a teaspoonful of the mixture, and that she had not helped herself later, especially as she had a decided dislike for the mixture.

With regard to the third possibility, the mixture is already yellow, from the presence of tincture of senega, and the slight alteration of colour produced by the liberation of bromine would probably not be noticeable, but the symptoms were those typical of bromoform rather than those of bromine poisoning.

Very similar symptoms were, however, observed in a case mentioned by Oberdorfer of a child, four and a half years old, who took five drops of bromoform three times a day for a week. The order was then repeated for the next week, but on the second day, just after a dose, the child became comatose, with rapid, feeble pulse and stertorous breathing. The fluid in the bottle was found to have separated into two layers, a lower "muddy," and an upper oily and viscid. Analysis showed that it consisted of bromine and hydrobromic acid. Burton-Fanning also mentions two patients in whom drowsiness and slight intoxication were ascribed to bromoform which had been allowed to decompose.

Other instances in which symptoms of severe poisoning occurred after relatively small doses are mentioned by Dillard in a child, aged sixteen months, to whom a dose of four drops was given and repeated in two hours' time, and by Lobl in a child, aged seven months, to whom only five drops were given, and in a boy, aged two years, who took four drops, followed, through an error, in an hour's time by another four.

On the other hand, Charpentier mentions the case of a child, of two years, who took as much as thirty-four drops a day without any ill-effects.

In nearly all the recorded instances of bromoform poisoning symptoms have been observed to commence almost immediately after the peccant dose has been taken.

Cheney, however, records the case of a girl, three years old, taking two drops of bromoform every four hours, who having lunched heartily at 1 p.m. took the last dose of her medicine, which was observed to look oily, at 2.30. All the afternoon she seemed perfectly well, being out of doors walking, but at 5.30 she complained of giddiness, fell down and passed into a condition resembling intoxication, followed by complete unconsciousness, from which she finally awoke, after appropriate treatment, at 8.30.

When symptoms of bromoform poisoning have arisen they have consisted, in mild cases, of headache, faintness, giddiness, uncertain gait, incoherent speech, causeless laughter and drowsiness.

In severe cases there has been insensibility, pallor, cyanosis, coldness of the surface, loss of the corneal and other reflexes, anæsthesia, weak, irregular, rapid pulse, retching, vomiting and, in Benson's case, involuntary defæcation. The breathing may be stertorous or shallow or may fail entirely, so that artificial respiration is imperative. The pupils are generally stated to be contracted or pin-point, but in a few cases were dilated, and in one of Burton-Fanning's were unequal. The skeletal muscles are, as a rule, described as flaccid or relaxed, but some authors lay stress upon an exception in the case of the masseters, which are in several instances mentioned as being contracted. Spasms and cramps have also been met with in the limbs.

As a rule, the characteristic bromoform odour pervades the breath, and may, according to Hasemann, be detected as late as twenty-four hours after the drug has been swallowed, whilst in Evans's case there was a sweet smell to the breath for several days.

The treatment adopted has included the use of emetics,

lavage of the stomach and bowel, counter-irritation over the kidneys, friction and slapping of the skin, elevation of the feet, application of cold water to the chest, hot fomentations to the heart, the introduction of strong coffee, brandy and ammonia into the stomach and rectum, strychnine, ether, whisky and atropine hypodermically, strong ammonia to the nostrils, oxygen, faradism, rhythmic traction on the tongue and artificial respiration.

Post-mortem examinations have disclosed nothing characteristic. Hyperæmia of the brain and of the gastric and rectal mucosa has been met with, and in Müller's case the blood is described as dark red and fluid; in this case 1.16 grammes of bromoform were recovered from the gastro-intestinal tract after death.

It will be seen from the foregoing that whilst those who have had considerable experience of this drug are almost unanimous in giving a favourable verdict on its influence in controlling whooping cough, the remedy is not without considerable potentiality for evil.

In the first place is the risk common to all poisonous drugs—for instance, belladonna or butylchloral hydrate—of a large overdose, a risk rather greater, perhaps, in the case of bromoform on account of the partiality some children display for it.

Secondly is the danger, when the drug is prescribed in mixture, of the *last dose*, a danger diminished but not entirely obviated, as is shown by the case recorded by Benson, by emulsifying the drug with tincture of senega.

So alive was Burton-Fanning to this peril, that in addition to impressing upon his out-patients the importance of thoroughly shaking the bottle, he counselled them always to throw away the last dose.

A still better plan, doubtless, would be to follow what is, to judge from the literature, the almost universal practice now on the continent, and let the required number of drops of pure bromoform be dropped each time into a teaspoonful of water, or to give the drug in capsules.

	Sex.	Age.	Quantity of Bromoform taken.	Result.	Recorded by	Reference.
1	♀	1¼	2 grammes	..	Löwenthal	*Berl. klin. Wchnschr.*, 1890, xxvii, 508.
2		4	1½ grammes	..	Sachs..	*Therap. Monatsh.*, 1890.
3	♂	4½	20 drops	..	Pannwitz	*Ibid.*
4		1 m/12	....	D	Nauwelaers	*Rev. mens. d. Mal. de l'Enf.*, 1891, Feb.
5	♀	3	6 grammes	..	Nolden	*Therap. Monatsh.*, 1892.
6	♂	2½	4 grammes	..	Nolden	*Ibid.*
7		8/12	Last dose	..	Platt	*Times and Reg.* (Phila.), 1892, xxiv, 651.
8		..	?	..	Burton-Fanning ..	*Practitioner*, 1893, l, 100.
9		..	Drug decomposed	..	Burton-Fanning ..	*Ibid.*
10		..	Drug decomposed	..	Burton-Fanning ..	*Ibid.*
11	♀	4	Last dose	..	Dean	*Lancet*, 1893, i, 1062.
12	..	..	....	D	Leurns	Die Hebenwirkungen der Arzneimittel, 1893.
13	♂	5½	20 drops	..	Schliepers	*Therap. Monatsh.*, 1894.
14	♂♀	2	10 grammes between the	..	Fiertz	Inaug. Dissert., Zurich, 1894.
15	♀	4	two in 24 hours	..	Fiertz	*Ibid.*
16		1 10/12	50 drops	..	Bömmel	*Deutsche med. Wchnschr.*, 1896, xxii, 46.
17	♂	2½	5–7 grammes	..	Czygan	*Ibid.*
18	♂♀	5	15–20 drops	..	Börger	*München. med. Wchnschr.*, 1896, xliii, 469.
19	♀	3	5 grammes	..	Börger	*Ibid.*
20		4½	4–5 grammes	..	Szegvári	*Gyogyaszat* (Budapest), 1897, xxxvii, 304.
21	♀	3	Last dose	..	Cheney	*Arch. Pediat.*, 1897, xiv, 112.
22	♂	2	5–6 grammes	D	Müller	*München. med. Wchnschr.*, 1898, xlv, 1211.
23		..	....	..	Reinecke	1898.
24	♀	5	Last dose	D	?	*Lancet*, 1898, ii, 1816.
25		..	....	..	Kirste	*München. med. Wchnschr.*, 1899, xlvi, 1134.
26		4¾	....	..	Schmitt..	*Ibid.*, p. 149.
27	♀	2	Last dose	..	Stone	*Boston M. and S. J.*, 1899, cxl, 160.
28	♀	8	Last dose	..	Evans	*Lancet*, 1899, i, 119.
29		..	Last dose	..	Burton-Fanning ..	*Ibid.*, p. 189.

	Sex.	Age.	Quantity of Bromoform taken.	Result.	Recorded by	Reference.
30		..	Last dose	..	Burton-Fanning ..	*Ibid.*
31		..	Last dose	..	Burton-Fanning ..	*Ibid.*
32		4	Last dose	..	Stokes	*Brit. M. J.*, 1900, i, 1,283.
33		2	Last dose	..	Stokes	*Ibid.*
34	♀	6	1½ drachms	..	Darling	*Ibid.*, p. 1,340.
35	♀	9	Last dose	..	Burton-Fanning ..	*Ibid.*, 1901, i, 1,202.
36		..	....	..	Kiwull	*Zentralbl. f. innere Med.*, 1902, xxiii, 1,233.
37	♀	$2\frac{9}{12}$	30–40 drops	D	Dwelle	*J. Am. M. Ass.*, 1903, xli, 1,540.
38		$1\frac{4}{12}$	4 drops repeated in two hours	..	Dillard	*Therap. Gaz.*, 1903, xix, 221.
39	♂	4½	?	..	Filbert	*Amer. Med.* (Phila.), 1904, vii, 254.
40	♀	4½	Five drops	..	Oberdorfer	*Arch. Pediat.*, 1903, xx, 842.
41		..	....	..	Roth	*Med. inf.* (Paris), 1905, 452.
42		4	A drachm	..	Tresling	*Nederl-Tydschr. v. Geneesk.*, 1906, i, 788.
43		..	....	..	Cijfen	*Ibid.*, p. 1,068.
44	♂	$\frac{7}{12}$	Five drops	..	Lobl	*Wien. klin. Wchnschr.*, 1907, xx, 564.
45	♂	2	Four drops repeated in one hour	..	Lobl	*Ibid.*
46	♂	4	....	..	Lobl	*Ibid.*
47		$1\frac{0}{12}$	Last dose	..	Benson	*Brit. M. J.*, 1907, ii, 204.
48		..	Last dose	..	Langdon	*Ibid.*, p. 1,648.

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3 *Berl. klin. Wchnschr.*, 1890, xxvii, 508.
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5 *Rev. mens. d. Mal. de l'Enf.*, 1896.
6 Hutchison and Collier, *Index of Treatment*, 1908, p. 850.
7 *Proc. Roy. Soc. Med.*, 1909, ii, Sect. Dis. of Childr., p. 77.

The risk of decomposition can be lessened by keeping the drug from the sunlight, dispensing it in darkened bottles, and replacing the stopper immediately.

With all these precautions, the fear of poisonous effects arising is reduced to a minimum; but there will, no doubt, still remain a certain number of cases in which unpleasant effects are caused, and it seems of great importance that all these should be recorded, in order that a correct estimate may be formed as to whether the undoubted virtues of the drug are or are not counterbalanced by its drawbacks.

In the table given it may be useful to bear in mind that there are about eight "drops" of bromoform in a minim, and that about six minims weigh one gramme.

Progress of the Medical Sciences.

MEDICINE.

Epilepsy and its Treatment.—Considerable attention has recently been given to this important subject, which now is accorded the honour of a journal solely devoted to its discussion, and appropriately named *Epilepsia*. A masterly account of the present position is given by Dr. W. Aldren Turner in his Morison Lectures, which were published in the *British Medical Journal* during March and April of the present year. As regards treatment, Dr. Turner points out that in all cases it is the patient and not the disease merely that requires treatment. All sources of peripheral irritation—*e.g.* adenoids, errors of refraction, dental caries, dyspepsia, etc.—should be removed, and a fair amount of exercise, hot baths and douches, and an out-of-door life are to be encouraged. Mental exercise of an ordinary kind should not be forbidden, unless the fits have been brought on by the strain of an examination or some similar cause. As regards drugs, "there is no single specific remedy in the treatment of epilepsy, although the alkaline salts of bromine come nearest to this definition. But the influence of the bromides on epileptic convulsions is variable and uncertain." Among 366 cases, in 23.5 per cent. the fits were arrested, in 28.7 per cent. there was improvement, and in 47.8 per cent. there was no improvement, or the frequency and severity of the attacks was actually increased. These figures are

in accordance with those of other authorities. The question of dosage is important. Moderate doses (45 to 90 grains daily) of bromine salts are recommended; larger doses only set up bromism, and do not produce any permanent good: the drug should be taken for at least two years. Dr. Turner prefers the sodium salt, but notes that the strontium salt is also useful, and may be given in smaller doses. Dr. Taylor[1] practically coincides with Dr. Aldren Turner in his method of administration of bromides, at the same time remarking that the strontium salts are not liable to cause acne. In all cases he combines nux vomica with the bromides, which he says prevents the general depression consequent on a long course of bromide alone. Both these authorities agree also in recommending digitalis when the ordinary indications for that drug, especially low arterial pressure, are present.

A considerable amount of evidence has now accumulated as to the value of **calcium salts** in epilepsy, although it is not clear yet what class of case is likely to be benefited. Donath,[2] in *Epilepsia*, has summarised recent investigations on this subject, and also recorded nine cases of his own, in which the results were not, however, satisfactory. The use of these salts was based on Sabbatani's observations to the effect that calcium salts lowered the excitability of the cortical cells, whereas oxalates and citrates produce an opposite effect. It was then thought that possibly some connection between the coagulation time of the blood and the frequency of the fits might be established, but the results of Besta's and Perugia's experiments, which showed a diminution of coagulability directly proportional to the number of fits, have not been confirmed by others. Equally discordant are the results of those who, like Stoltzner, Netter, Cohn and Quest, tried to prove a diminution in the calcium content of the brains of infants who had died of tetany, or lowered sensibility to galvanism during life.

Lallemant and Dupouy[3] gave 3 grammes (45 grains) calcium chloride per diem to fourteen adult women for six months, but obtained negative results in all cases.

Littlejohn,[4] on the other hand, giving 15 grains calcium lactate thrice daily was able to report very favourably on the action of the drug in otherwise obstinate cases.

Observations by Dr. Muskens,[5] also published in *Epilepsia*, point to a new method of treating the epileptic attack based upon the power to foresee its occurrence. He observed that previously to the fit certain sensory alterations occurred in the form of segmental analgesias or areas of diminished sensibility,

[1] *Lancet*, 1910, i, 354. [2] *Brit. M. J.*, 1910, i, 281.
[3] *Gaz. d. Hôp.*, 1910, lxxxiii, 712. [4] *Lancet*, 1909, i, 1,382.
[5] *Brit. M. J.*, 1910, i, 769.

which were replaced by hyperæsthetic areas after the discharge had taken place. The frequency with which this phenomenon was noted appears to vary somewhat. Muskens states that it occurs in 44 per cent. of his cases, but other observers have recorded it in as many as 80 per cent. Where this prodromal warning occurs, the author finds that he can often abort the fit by increasing the dose of bromide, and at the same time administering a sharp purgative.

Nicotine and Tobacco Smoke. Up till a few years ago, it was very generally believed that tobacco smoke owed most of its toxic properties to the so-called "pyridine bases"—bodies derived from an aromatic substance having the formula C_5H_5N, that is benzine in which one CH group has been replaced by nitrogen. The alkaloid nicotine, which is itself a pyridine derivative, was thought to be decomposed at the temperature of ignited tobacco. As was pointed out, however, by Dixon Mann [1] in a short paper on the effects of excessive smoking, there has been a considerable accumulation of recent evidence in favour of nicotine being the chief poisonous constituent of tobacco smoke. Not only have numerous observers shown that nicotine is present in considerable amounts in the smoke, but from the physiological side also experiments have been carried out proving that the symptoms of tobacco smoke poisoning in animals are identical with those produced by nicotine. On the other hand no effect was produced either in man or animals when tobacco freed from nicotine was employed experimentally, although in this form the "pyridine bases" were undoubtedly present. The fact that in many cases of arterio-sclerosis the original hypertension appears to have been due to excessive use of tobacco is to a certain extent born out by animal experiment, though the arterial changes are not altogether those of ordinary arterio-sclerosis, but tend (in rabbits) to produce rather atheroma of the aorta.

It is, however, certain that there are other important poisons besides nicotine in tobacco smoke, and one of the chief of these is carbon monoxide. CO-hæmoglobin may be produced experimentally by passing small amounts of smoke over a dilute solution of blood. [2] It is stated that one ounce of tobacco smoked in the form of cigarettes gives off from one to four pints of carbon monoxide, while the same amount in a pipe gives off from two and a quarter to five pints. As little as 0.15 per cent. CO in the atmosphere is usually considered dangerous, and 0.4 per cent. is fatal to animals. These observations certainly tend to show that, apart from other considerations, the practice of inhaling cigarette smoke is one of the factors which renders this form of

[1] *Ibid.*, 1908, ii, 1,673. [2] *Lancet*, 1908, ii, 104.

tobacco more generally toxic than the other two. Other constituents of tobacco smoke are stated by Dixon Mann to comprise ammonia, methylamine, hydrocyanic acid, sulphuretted hydrogen and tarry products (higher phenols). Recently[1] it has been shown that thiocyanates, probably of ammonium, may be added to this list without, however, any great increase in the physiological effect, as the complex ion SCN does not produce the typical cyanogen symptoms.

A curious case in which tobacco was ingested unburnt has been recorded by Lemaire.[2] An infant just over one year of age swallowed one of Wills's "Three Castles" cigarettes, containing rather more than 1 gramme (15 grains) of tobacco. This took place at 6 p.m., and there were no results for an hour or two, when diarrhœa, vomiting and collapse set in, both fæces and vomited matter containing portions of the cigarette. The pulse and respiration were not disturbed, and warm stimulants restored the child, who subsequently went to sleep and appeared to be none the worse by the following day.

Investigations carried out last year[3] showed that, speaking generally, the proportion of nicotine in a given tobacco, cigar or cigarette, corresponded with its strength or mildness from the smoker's point of view. Good quality Virginian cigarettes contained nearly twice as much nicotine as Egyptians, and common Virginians sold at five a penny, though showing a smaller amount than the better sort, still contained more than either Turkish or Egyptian brands. The latter observation may possibly be explained by the fact that cheap Virginian cigarettes are not solely composed of tobacco. A cigar, a pipe, and four Egyptian cigarettes, all took about the same time to smoke—namely 50 minutes—and the amount of nicotine contained in each would be 0.9 grain, 1.1 grain, and 0.9 grain respectively, though of course it is not thereby shown that the alkaloid is absorbed by the smoker in like ratios: indeed, it seems probable that the pipe is by far the least harmful method of smoking,[4] due regard being had to the "strength" of the tobacco employed. The condensation products mainly collect in the stem and bottom of the bowl, and the smoke is not so commonly inhaled or swallowed. In addition to this, as Dixon Mann pointed out in the paper to which reference has already been made, nicotine is absorbed through the unbroken skin, and the discoloured fingers of the habitual cigarette smoker must therefore be the means of entrance for some of the poison into his body. It is, however, probable that the complete access of air to the cigarette renders combustion more complete, though possibly this only means the formation of more carbon monoxide. The cigar is

[1] *Ibid.* [2] *Ann. de Méd. et de Chir.*, March, 1909.
[3] *Brit. M. J.*, 1909, i, 919., [4] *Lancet*, 1910, i, 314.

generally considered the most dangerous form in which tobacco can be taken, mainly owing to the fact that the products of condensation travel gradually into the "proximal" end, and so into the mouth of the smoker.

It will be very consoling for the habitual smoker to learn that there is some evidence to show that tobacco may give protection against epidemic cerebro-spinal meningitis.[1] Out of 43 soldiers in a French regiment suffering from this disease, of whom exact particulars could be obtained, it was found that 25.2 per cent. were smokers, 30.2 per cent. "occasional" smokers, and 44 per cent. non-smokers. The smokers in the regiment were estimated at 94 per cent. of the total strength, so that it was concluded that some protection was afforded by the habit. Moreover, as to virulence, among nine fatal cases only one was a smoker, four were "occasional," and the rest non-smokers. Apparently regular and persistent smoking is necessary to secure any degree of protection, and should further and more extensive observations support the conclusions derived from this preliminary study, many will no doubt feel considerable satisfaction in knowing that some really valuable result has been attained by their painstaking efforts to create "records" in their annual or daily consumption of the weed.

Skaller,[2] moreover, by making a solution of cigar and cigarette smoke, and injecting it into dogs with Pawlow's fistula, showed that the products of combustion caused a considerable increase in gastric secretion. A solution of .02 gm. pure nicotine had the same effect, whereas smoke from "nicotine-free" cigars gave a negative result. He concludes that after a heavy meal a cigar may actually improve digestion, though he notes that actual hypersecretion is an earlier symptom of nicotine poisoning than the well-known central scotomata.

J. M. FORTESCUE-BRICKDALE.

SURGERY.

Injury to the Semilunar Cartilages of the Knee-joint is a troublesome affection, which too often results in disappointment to the patient and practitioner. The subject is fully discussed in an excellent paper by Mr. Robert Jones,[3] based upon a personal experience of over five hundred operations. The wedge-shape of the cartilages practically determines the fact that only internal displacements can produce locking of the joint, and it is this internal displacement which gives rise to the acuteness of the attack.

[1] *Brit. M. J.*, 1910, i, 952.

[2] *Ibid.*, 1910, i, 460. [3] *Ann. Surg.*, 1909, l, 969.

The most common symptom is a sudden inability fully to extend the leg, and the usual cause of the mischief is a strain thrown on the internal lateral ligament while the knee is flexed and the femur rotated inwards. When the patient reaches home the knee is distended and manipulation difficult, and for several days there will be pain on pressure over the articular edge of the tibia opposite the ligament. If the patient is allowed to get about after two or three weeks' rest and massage, he is almost certain to get a relapse of the symptoms sooner or later, but the successive attacks to which he is liable are frequently not so severe as the primary one.

The localised pain produced by pressure over the injured spot is best elicited while the knee is flexed, when pressure between the bones can be more effectively made.

Diagnosis is by no means always easy, and in many cases only an exploration can give us accurate information. Hypertrophy of the synovial fringes, loose bodies, lipomata, osteomata and rupture of the crucial ligaments may be confused with a damaged semilunar cartilage. Injury of the internal semilunar cartilage is diagnosed by the acute onset, the persistence of pain on pressure over the injured area and the locking of the joint. The patient usually refers the pain to the front of the joint until pressure decides the real seat of the trouble. The history of the mode of production is helpful in arriving at a diagnosis. Injury to the external cartilage produces similar symptoms on the outer side of the knee, but is much more rare.

The symptoms of the nipping of a synovial fringe are less acute than those of displaced cartilage ; the pain is strictly local, and is not participated in by the internal lateral ligament. Creaking in the joint is a frequent accompaniment, and a swelling often occurs on each side of the ligamentum patellæ, due to the chronic thickening of the infra-patellar pad. Effusion always follows the nipping, but this is not an invariable rule with displacement of a semilunar cartilage

Loose bodies can usually be isolated by the patient, and the locking of the knee which they cause is only transitory. Effusions are common.

Lipomata sometimes lock the joint, causing swelling about the lower part of the patella and painless effusions. Pressure on the knee produces no pain, and the symptoms are rarely acute.

Osteomata may lock the joint when a muscle or tendon becomes entangled. They can be found by manipulation and by skiagraphy.

Rupture of the crucial ligaments allows the tibia to be moved in a to-and-fro direction, and when the knee is flexed the lateral movements are free. If the lateral ligaments are torn, lateral movements in the extended position are also free.

Mr. Jones maintains that a great distinction should be made

between a primary and recurrent luxation of a semilunar cartilage, and that operation should only be performed on recurrent cases. The first displacement will not be accompanied by any degenerative changes, and the knee often recovers completely if appropriately treated. (*a*) Reduction must be absolute (*b*) All movements of the cartilage must be checked until union of the torn structures is complete. (*c*) No lateral strain must be allowed until the torn or stretched internal lateral ligament has recovered its tone and strength.

We can only be assured of reduction when the knee can be voluntarily held in complete extension. The best routine manipulation is acute flexion, lateral deviation and rotation inwards and full extension. Acute flexion is always painful, but it is the only position where internal rotation is most free; lateral deviation separates the bones which hold the cartilage, and full extension allows of readjustment and places the limb in such a position as to permit of accurate union of the internal lateral ligament. Retention of the cartilage in a fixed position can only be secured when the limb is fully extended, for the cartilages participate in all rotatory and lateral movements of the joint. This rest of the limb in a fully extended position should be maintained in bed as long as effusion lasts. When all fluid is absorbed we may proceed to the next stage. It may be days or weeks, and massage may help, but under no conditions must flexion be allowed. The third indication is to prevent for a prolonged period lateral deviation of the joint. Mr. Jones differs from Sir William Bennett[1] and Mr. Whitelocke[2] as regards the prevention of lateral strain, and considers that a short splint, devised merely to prevent flexion and lateral deviation for the first few weeks, offers the only logical hope of recovery to the injured structures. Afterwards massage, and exercises can be assiduously employed. One of the simplest methods of preventing strain upon the internal lateral ligaments is to walk upon an inverted foot with inturned toes, and in cases where the cartilage becomes displaced frequently Mr. Jones has the boots altered so that both heels and soles are raised on the inner side. When the patient stands in such a boot the foot is inverted, and the lateral strain which is needed to displace the cartilage is avoided.

In cases where operation is not advised or refused a splint is indicated, so devised as to prevent lateral strain upon the knee and to allow free movement. In all recurrent cases which do not need operation, and in all cases of first displacement sufficiently recovered for flexion to be allowed, one orders a splint, alters the boot for the purpose of inverting the foot, and disallows walking except with parallel feet and running except with

[1] *Injuries and Diseases of the Knee-Joint*, 1909.
[2] *Sprains and Allied Injuries to Joints*, 1909.

inturned toes. In addition to this, the quadriceps muscle must be well massaged.

Mr. Jones refuses to operate in cases seen early, the subject of a first derangement. He discourages operation in those recurrent cases where the symptoms are transient and not followed by irritation of the joint, but strongly urges it in those cases where a recurrent displacement is at times followed by acute symptoms. He advises it in all recurrent cases where a strenuous athletic life is a means of livelihood or a physical necessity, and regards operation as absolutely imperative in the case of men who work or stand in dangerous places and where yielding of the knee may lead to serious consequences.

JAMES SWAIN.

DISEASES OF THE EAR, NOSE AND THROAT.

Acute Labyrinthitis following Mastoid Operation.—A variety of acute labyrinthitis not due to surgical traumatism is liable to arise after the radical mastoid operation, as in those grouped by Alexander under the term *labyrinthitis acuta circumscripta*. In the four instances reported by this observer the symptoms of labyrinthitis appeared within twenty-four hours after operation, viz. marked vertigo with vomiting and sometimes subjective movements of external objects, spontaneous nystagmus generally to the sound side, the patient lying on the sound side. After the rather violent onset, all the symptoms gradually subsided without any further operative interference, and at the end of a week the patients were perfectly well and able to get about. In two of the cases meningeal symptoms accompanied the labyrinthitis, but they disappeared even more rapidly than the labyrinthine symptoms. The author concludes that these manifestations were due to a transient serous labyrinthitis, and in all his four cases the recovery of the labyrinthine functions was complete.

Similar cases occur in the experiences of many operators, and now that vestibulotomy has become a practical procedure for suppurative labyrinthitis as well as for Ménière's disease, it is perhaps well to emphasise the transient character of the condition to which Alexander has directed attention.

Acute exacerbations of pre-existing and chronic labyrinthitis may of course follow a radical mastoid operation. These are cases in which the radical operation should be followed by vestibulotomy. Again, a traumatic breach of the external osseous wall in the course of a radical mastoid operation may be followed by acute labyrinthitis. These two classes of cases are due either to errors of omission or commission, unlike the form described by Alexander.[1]

[1] *Arch. f. Ohrenh.*, 1908, lxxv, 1; *J. Laryngol.*, 1910, xxv, 50.

Cancer of the larynx of slow development.—In its earlier stages cancer of the larynx is often very difficult to diagnose with certainty, and of any given neoplasm it is quite possible to remove a considerable fragment and yet on histological examination to find no indications of malignant disease. Some exceptional cases recently recorded must lead us to recast the prevailing view that malignant disease left to take its course is necessarily fatal within a relatively short period. Thus Harmon Smith[1] reports a case which in 1896 was shown by Gleitzmann to the American Laryngological Association as being probably malignant, he having first seen the patient towards the end of 1895. At that time a large snow-white mass covered the whole length of the right vocal cord. A piece submitted to the microscope showed that underlying epithelial cells showed marked proliferation, with a splitting of the nuclei; the submucosa showed a small-celled infiltration in consequence of connective tissue proliferation; the epithelial layer showed a tendency to invasion of the sub-epithelial tissues, as in carcinoma (Schwyzer). The case then disappeared from observation until August, 1907, *i.e.* almost twelve years from the time he was first seen. Then only certain areas of the white growth were to be seen, but the ventricular band was very much swollen, and parts of the cord on the opposite side were hidden by the similar swelling of the ventricular band on that side. There was no pain, no enlargement of glands, and no marked loss of weight. A piece then removed and submitted to Jno. Wright was reported to be probably pachydermia laryngis. In a second piece, removed a month later, the epithelium was found to dip down into the stroma in atypical fashion. There were several subsequent examinations of pieces removed from this growth from time to time. In January, 1908, the patient began to get worse and was weaker, and obstructive dyspnœa developed. The examination of the last piece removed in April, 1908, led Wright to the impression that the growth was now assuming a malignant histological appearance. Shortly after this the entire larynx was removed by Brewer, and Wright reported that a glance through the sections showed that the growth as a whole presented the characteristics of a flat-celled epithelioma. "We call it an epithelioma. Recognised fourteen years ago by two microscopists as being a malignant growth, it evidently has not changed its structure since." No external gland involvement was found.

Another interesting case with a very long-standing history was brought before the Laryngological Section of the Royal Society of Medicine by Tilley.[2] In September, 1896, the patient's right vocal cord was removed for epithelioma, the diagnosis being confirmed by histological examination after operation. Since

[1] *Tr. Am. Laryngol. Ass.*, 1909.

[2] *Proc. Roy. Soc. Med.*, Laryng. Sect., 1910, iii, 33.

then the patient enjoyed good health, until November, 1909, when obstructive dyspnœa necessitated tracheotomy, and the patient died a few hours later, aged 78. A well-developed epitheliomatous ulcer occupied the greater part of the left vocal cord.

I have myself recently shown an aged patient to the Bristol Medico-Chirurgical Society in whom a malignant growth of the larynx had existed for two and a half years. The patient was too old to be submitted to operation, as there was considerable glandular involvement when he first came under observation, but he still remains free from pain, and his general health has not been greatly impaired.

Obviously it does not follow that a patient who has malignant disease of the larynx must rapidly succumb unless radical extirpation is performed, and it is well to bear this in mind when the question of submitting to very extensive or dangerous operations have to be considered.

* * * * *

Treatment of laryngeal tuberculosis by the galvano-cautery.—Success in this method of treatment of laryngeal tuberculosis has been recorded by many laryngologists. Siebenmann analyses the results in sixty-six phthisical patients treated from 1903 to 1908 in his clinic with laryngeal lesions of varying severity. In the spring of 1909 36 per cent. of these cases were dead, 26 per cent. failed to report, and 38 per cent. reported themselves. Of the latter fourteen cases showed cure, while eleven showed recurrence in the larynx. Siebenmann's technique appears much more severe than that of many operators. A hypodermic injection of morphia is given three-quarters of an hour before operation, and the larynx is sprayed several times with 10 per cent. cocaine-adrenalin solution. The affected areas are then burned widely and deeply through the submucous tissue down to the cartilage, and an attempt is made to complete the operation in one sitting. Ice compresses are applied externally, and the patient put to bed. Œdema of the larynx was common after the operation. In two cases tracheotomy was required, and in one intubation. One patient died of heart disease after the operation, and in another case perichondritis arose leading to fixation of both cords.

We may contrast with the German method the milder, but apparently equally successful method usually adopted in this country. For instance, St. Clair Thomson[2] recently showed two patients: (1) tuberculosis of both vocal processes, cicatrised

[1] *Trans. of Society of German Laryngologists; J. Laryngol.*, 1909, xxiv, 696.

[2] *Proc. Roy. Soc. Med.*, Laryng. Sect., 1909, iii, 6; *J. Laryngol.*, 1909, xxiv, 667.

with seven applications of galvano-cautery between October, 1908, and May, 1909; (2) extensive tuberculosis of the epiglottis, left ary-epiglottic fold, and left inter-arytenoid space. Seven cauterisations were made between February and September, 1909. Improvement was marked from the first, and in November, 1909, when shown, the larynx was soundly healed, although nearly all the epiglottis had been destroyed. Tilley reports a successful case, and regards infiltration cases as the most suitable for this treatment. Dundas Grant also reports several successful cases, and states that the instant relief from pain is the most striking feature.

I have employed galvano-cauterisation in several cases with good results, the most suitable, apparently, being those which show infiltration and tumefaction, especially when there is superficial ulceration. When there is no ulceration, and the tumefaction is localised, I think better results may be obtained by submucous injections; and one of the most striking features of such injections, like that of the galvano-cauterisation, is the remarkable relief to pain. Probably the good effect following galvano-cauterisation is chiefly due to the non-infective inflammatory reaction set up, for it is difficult to suppose that the actual burning due to galvano-cautery punctures can successfully destroy the tubercle bacilli in the whole mass of infiltration.

These methods should be combined with sanatorium treatment and vocal silence, for everything that can be done to assist in the cure must be adopted.

* * * * *

Röntgen Ray treatment of laryngeal disease.—Brünings [1] has shown that the rays may be applied in four different ways to the larynx: (1) by internal tubes, the anti-cathode being in the same position as the laryngeal mirror; (2) by endoscopic tubes used through a bronchoscope; (3) by radiation through the skin; (4) by radiation after operation. Only the percutaneous method is generally available, and does not present the difficulties and drawbacks of the other methods, which are still in the investigation stage.

For the percutaneous application it is best to apply the rays from several points consecutively, so as to avoid injury to the skin as far as possible. Hard rays are advisable as absorption is slower, and glass discs should be used as filters to keep back all soft superficial rays. Brünings recommends sittings lasting twenty to thirty minutes, so as to obtain the normal dose of 5 H. when using a focal distance of 20 cm., and tubes of 7 to 8 (Benoist) degrees of hardness.

For the treatment of laryngeal lupus the application of

[1] *J. Laryngol.*, 1909, xxiv, 695.

Röntgen Rays in this manner is worthy of fuller trial, first in order to avoid permanent injury to the vocal cords by operative methods, and to clear up foci of disease which are inaccessible to curettment or galvano-cauterisation.

P. WATSON WILLIAMS.

Reviews of Books.

Symptoms and their Interpretation. By JAMES MACKENZIE, M.D., M.R.C.P. Pp. xx, 297. London: Shaw and Sons. 1909.

In the list of writers to whom Dr. Mackenzie in his preface expresses his indebtedness occurs the name of Hilton, and this book on *Symptoms and their Interpretation* might very well be looked upon as an appendix to that author's world-renowned work on *Rest and Pain*. The whole object of the author is "to draw attention to the valuable aid to diagnosis afforded by the careful study of pain, and the nervous phenomena which accompany it," and writing from the stand-point of the general practitioner, he exhorts those engaged in the every-day work of the practice of physic to take up their position as "investigators, and to carefully investigate the reflex symptoms of disease which lie ready to their hands, as it often is on these alone they have to rely for diagnosis and treatment," the more intricate methods of examination of the laboratory or well-equipped hospital often not being available.

The first few chapters are given up to general considerations, such as classification of symptoms of disease, pain, visceral pain, the viscero-motor reflex, etc., after which come chapters on the symptoms of disease of the various organs, a chapter being given to each organ, the stomach, liver, urinary system, etc. In every case valuable suggestions as to diagnosis will be found, special stress being laid on the situation of the pain, and the value to be attached to hyperalgesia of the skin and its subjacent structures in various localities. For instance, in gastric ulcer the author claims to be able to localise the situation of the ulcer; thus if the pain and hyperalgesia be in the upper part of the epigastrium the ulcer is in the cardiac end of the stomach, if in the mid-epigastrium in the middle of the stomach, and if at the lowest part of the epigastrium it is at the pylorus. Again, in gall-stone colic hyperalgesia over the region of the liver may be made out during the attack, or it may persist for some weeks after an attack, and this symptom may be of the greatest use in

differentiating an attack of gall-stone colic, attacks which are by no means always easy to diagnose.

In these days of book-making with copious extracts from other works—more especially German—and reports of researches in laboratories, it is quite refreshing to come across an author who gives an account of his own work and his own conclusions written in a breezy and fascinating style that carries the reader along with him. The book is to be cordially recommended to medical readers, to the student as an incentive to him to be accurate in his observations and in reporting cases, and to every medical man engaged in the active practice of his profession, as he will find the interpretation of various symptoms here put before him of the greatest use in his daily work. Dr. Mackenzie is known everywhere in the medical world for the colossal work he has done on disease of the heart, done, be it remembered, whilst he was engaged in the drudgery of a large general practice, and this small book on *Symptoms and their Interpretation*, though of less magnitude than his other works, cannot but add to his reputation.

Medical Morbid Anatomy and Pathology. By H. THURSFIELD, M.D., F.R.C.P., and W. P. S. BRANSON, M.D., M.R.C.P Pp. viii, 262. London: H. K. Lewis. 1909.

A most worthy book which, masquerading as a museum catalogue, turns out on closer acquaintance to be a series of essays on morbid anatomy, written in crisp, vigorous, and intelligible English. (It is so long since we met our mother tongue in a medical treatise.) The descriptions of the results of disease in the various organs are excellent, though room might have been found for the more recent observations on myocardial degenerations and heart rhythm. Syphilis as manifested in the mouth is not very adequately set forth: primary chancres are said to be "found most often on the lips or tongue," although the majority of observers regard tonsillar chancre as the commonest extra-genital primary lesion. The characters of the secondary "snail-crawl" ulceration are not made plain, and Hutchinson's teeth are described as "wider at the margins than the base," which, if by margin is meant the cutting edge, is certainly inaccurate.

Many tropical infections, such as sprue and kala-azar, now becoming familiar in England, go unnoticed. The French observations on sporotrichosis and allied mycoses are also disregarded. And surely abdominal aneurysm has a medical aspect.

We point to these omissions not in a captious spirit, but because the work is so excellent that a second edition is

inevitable; and there, perhaps, brief reference will be made to alien, but no longer unfamiliar, diseases.

The format of the volume is attractive, and typographical errors are few (*e.g.* "carnfication" on p. 103, and "splenculi" on p. 201); but why are we allowed no diphthongs in such words as amœbæ?

The book is one which every student and practiser of physic will read with advantage and delight, while those who appreciate the literary flavour of a scientific repast will return with added zest to read again.

Arthritis Deformans. By R. LLEWELLYN JONES, M.B. Lond. Pp. xiv, 365. Bristol: John Wright & Sons Ltd. 1909.

Dr. Jones has in this volume, with the sub-title, comprising "Rheumatoid Arthritis, Osteo-arthritis, and Spondylitis Deformans," given a most excellent epitome of present-day knowledge of the diseases of the rheumatoid class. Agreeing with most modern workers, he makes a sharp distinction between the two diseases, rheumatoid arthritis and osteo-arthritis, nor does he believe that the former may merge into the latter. Another sign of our increased knowledge of these diseases is the gradual emergence of rheumatoid arthritis as a disease distinct from various septic and tubercular joint infections; whilst the condition known as Still's disease is here shown to be not a separate entity, but to be made up partly of atypical cases of tuberculosis and very largely of cases of rheumatoid arthritis modified by its occurrence in young children. Three-fifths of Dr. Jones's work is taken up with the consideration of rheumatoid arthritis. The author discards the modern theory of a bacterial origin, and very ably and convincingly supports the view that the condition is a spinal toxæmia, or toxic tropho-neurosis of gastro-intestinal origin. The chapters on pathogeny and on premonitory symptoms are of the best in the book, and will well repay study, although possibly the author's views will later on need revision when a further examination of the disease has been made in the light of the opsonic index and vaccine therapy. The author's well-known views on the subject of the nervous and vaso-motor symptoms of rheumatoid arthritis will be found here fully expounded, and will be read by all with interest and profit. With regard to osteo-arthritis and its causation, we find, after eliminating cases of proliferative arthritis due to tubercle, trauma and sepsis, that the two theories which hold the field to-day are, firstly, that the condition is part of a general metabolic change accompanying widespread arterio-sclerosis, or, secondly, that it is due to the withdrawal or perversion of one or more of the internal secretions, such as that of the thyroid or ovary. The writer supports the internal secretion theory, and it is one which is certainly growing

in favour with the medical profession. The chapters devoted to treatment are full of good, sound, practical advice, and are the more valuable as being written by one who is thoroughly conversant with modern balneo-therapeutic measures, Dr. Llewellyn Jones is to be congratulated upon the very excellent illustrations which are so profusely provided, and upon the exhaustive bibliography, which adds so much to the value of his book, and which will help to make it the standard work on rheumatoid conditions for many years to come.

Constipation and allied Intestinal Disorders. By ARTHUR F. HERTZ, M.D. Oxon. Pp. xiii, 344. London: Oxford Medical Publications. 1909.

Three years' research on the physiology and pathology of the movements of the alimentary canal, with the assistance of grants from the British Medical Association and the help of many friends, particularly in the X-ray investigations, have enabled the author to produce a work which should be an advance on the previous monographs on constipation. Many attempts to determine what part of the intestine is to blame in different forms of constipation have been made by tracing with the X-rays the passage of food mixed with a bismuth salt, and by comparing the results so obtained with the clinical symptoms and signs much useful knowledge has been gained. Bismuth has been given in much larger doses than heretofore, two ounces of the bismuth oxychloride having taken the place of much smaller doses of the bismuth subnitrate, which in full doses has not seldom given rise to symptoms of poisoning. The oxychloride is quite inert in the stomach, and is also uninfluenced by the alkaline intestinal contents. After a bismuth breakfast at 8 a.m., the shadow reaches the splenic flexure by five in the afternoon and the pelvic colon the next morning.

The causes of constipation are classified according to an elaborate system into (*a*) deficient motor activity of the intestines, (*b*) obstruction of the intestinal lumen, (*c*) inefficient defæcation, and (*d*) obstructed defæcation. The last two classes are grouped together under the term Dyschezia. In the majority of the cases of primary constipation, Dr. Hertz has found that the stasis occurs in the pelvic colon, and he considers that the whole colon below the splenic flexure should be emptied at each act of defæcation. The idea that the cæcum and ascending colon ever form a "cesspool" is strongly denied. These facts cause the author to condemn the treatment of severe constipation by operative methods. But he overlooks the fact that the operation of ileo-sigmoidostomy is one which results in fluid being passed into the pelvic colon instead of hard fæces, and it may well

be that this gut can deal with such contents effectively when it is powerless to expel scybala. The fact that in idiopathic dilatation of the colon a larger proportion of cases treated surgically recover than of those treated by expectant methods is not mentioned.

Rather more than half the book is occupied by a consideration of the symptoms and treatment of constipation, and whilst this forms a most able and valuable résumé of what is known on this subject, one is rather struck with the paucity of new ideas of practical importance which have resulted from the new method of investigation.

Modern Problems in Psychiatry. By ERNESTO LUGARO. Translated by DAVID ORR, M.A., and R. G. ROWS, M.D. With a Foreword by T. S. CLOUSTON, M.D. Pp. vii, 305. Manchester: at the University Press. 1909.

A merely perfunctory notice of the translators' task is in this case insufficient. Drs. Orr and Rows deserve full recognition of their masterly rendering into English. The language of the author is so concise, absolute precision is so vital in expressing intelligibly his subtle and involved reasoning, the intimate knowledge of the subject treated is so essential, that exceptional abilities have been required in the work of translation. This production of Lugaro's is in every way remarkable and admirable. In a volume of very moderate dimensions he has reviewed most of the realm of psychiatry and placed under special survey the problems chiefly deserving attention. A preface by Dr. Clouston forms a commentary and epitome of a work which is almost beyond reviewing; our purpose here can be no more than to notice its main features and tendencies.

Prominent is Lugaro's materialism, the inevitable result to his sanguine mind of the steady aggregation of physico-pathological findings in the nervous system. To him the somatic side of insanity only awaits revelation, and whilst appreciative of the intense difficulties of the task, he is hopefully sustained by discoveries already made, and is fruitful of hypotheses and suggestions for future investigators. No feeling of mysticism daunts, no impassable barrier between matter and mind presents itself to him. The whole tendency of his work is to inculcate a habit of regarding symptoms and their physical correlatives in parallel, and to estimate the disease in terms of the latter.

Lugaro's full comprehension of current literature enables him to condense into lucidly-expressed but brief space all that is worthiest in recent research. The structure and functions of the neurones are clearly discussed; their relationship to the external world; their intra-neuronic modifications, or affective

tone, in regard to organic states; the nature and importance of the neuroglia; the hypotheses of dynamic polarisation, avalanche, chemiotropism, associationism, reciprocal currents between related centres, and many other subjects are treated of. A careful consideration is given to the determination of the nature and sites of morbid lesions, and to the needful caution to be exercised in estimating the influences of disturbances provoked secondarily or by a common cause, such as toxæmia. Thus in senile dementia and general paralysis the involvement of nerve-elements is unsystematic and diffuse, and the symptoms are complex, both by reason of this irregularity and of the nutritional implication. That even the simplest images have an extensive representation in the cortex has also to be remembered. Again, lesions more limited in zone or system are indicated in dementia precox (probably a primary disease of cortical neurones), or in systematised delusions. Lugaro lays stress on the dynamic or functional disturbances underlying affective states, the primary spontaneous character of the latter, and their paramount influence on ideation. Congenital or acquired, they exercise their dynamics in coercing all images and associations to harmony with their prevalent tone; a biased view is thus presented to consciousness.

The author places the origin of fixed ideas in the apprehensive affective state aroused by their persistence. His theory of hallucinations is that they are dependent on over-functionating in the re-presentative centres which register those images formed in the perceptive centres; that is, an over-energising of the stimuli reflected from the former arouses images in the latter, similar to those produced by external objects.

The section on etiology is as encouraging as valuable. All endogenous and exogenous causes of mental disease are reviewed, and Lugaro evolves a lengthy list of influences—material, assailable or eliminable—offering a hopeful prospect for treatment, particularly of a prophylactic kind. Lugaro's views on inheritance are indicated in his statements that heredity tends to perpetuate unaltered the products of biological experience, and the adaptations that have been acquired during the evolution of life. Degeneration, then, is a disease of the stock, acquired through external influences, and may be recovered from by the inverse process of regeneration. One would assume, however, that this opinion must be accepted conditionally as being a matter of degree. The author then favours the hereditary transmission of acquired qualitative somatic characters, and the transformation of functional hypertrophies into normal stabile growths, a correlative influence, continuous and dynamic, existing between every organ and tissue and germ-plasm. The acquisitions are probably strengthened and fixed through the operation of natural selection, whilst it is owing to the establishment of a

physiological equilibrium that the progressive transmission of functional hypertrophies becomes arrested.

A strong and hopeful plea for the corrective influence of a healthy environment is advanced. Recognising the merely provisional terminology of many of the so-called "syndromes," Lugaro admits but a small list of clinical entities; it is the conception of the disease itself that he seeks to establish, the study of the cerebral and extra-cerebral organic processes underlying that is of importance.

His final chapter on practical problems is a general disquisition on the main principles of prophylaxis and treatment, on asylum administration, the relations between insanity, crime, punitive and deterrent measures, and so forth, together with some stringent criticisms of the attitude of expert witnesses in medico-legal cases. It is impossible to do justice in a brief notice to the merits of this book. It has long been awaited, and will doubtless meet with every success. The publishers have done their part admirably.

Pulmonary Tuberculosis and Sanatorium Treatment. By C. MUTHU, M.D. Pp. x, 201. London: Baillière, Tindall & Cox. 1909.

This survey of the scientific, the sanatorium and the social aspects of tuberculosis is the outcome of ten years' observation and work by the author in open-air sanatoria. It gives the matured convictions of one whose life has been given up to this kind of study. His experience has been large, and he is more than ever convinced that the sanatorium movement has not only revolutionised the treatment of consumption, but has shown to the world a way for the attainment of larger health and more wholesome living. He considers that open-air sanatoria are really doing the work of the State in that, as so many centres of education, they teach the people the gospel of fresh air to improve their stamina and efficiency.

As regards the question of communicability of the disease, he is quite in accord with those who maintain that tuberculosis possesses the lowest communicability of any of the infectious diseases, and that if ordinary precautions are taken for the disposal of the sputum, the risk of personal communication is very small.

Dr. Muthu holds that, as regards early diagnosis, no method is superior to the ear of the trained physician, and that physical signs should detect the presence of the disease long before any other method can possibly indicate it. He considers that the tendency of the present day is to rely too much upon experimental evidences, and that there is a danger that the physician may

become too dependent on the pathologist for diagnosis, when by his clinical acumen he should form a judgment even more reliable, He does not encourage the use of tuberculin as a diagnostic or therapeutic agent ; he finds that the opsonic index is not reliable, that Calmette's reaction is by no means an infallible guide, and that the X-ray method is of little use. He looks forward to the time when the medical profession will be trained to detect by physical signs the earliest evidence of commencing tuberculous mischief, and that the sanatorium will be used not so much for curing or arresting consumption as for treating suspicious cases, and nipping the course of the disease in its early periods.

He rather strongly advocates the use of various kinds of exercises, such as breathing, singing, reading, and manual exercises, as part of the sanatorium routine ; he also finds benefit from formaldehyde inhalations, the use of static electricity, and from Kuhn's Suction Mask.

Nothing is more difficult than to appraise the value of any one vaunted method of dealing with a disease so complex as pulmonary tuberculosis. There can be no objection to many of these methods when carried on in conjunction with sanatorium life, but on the other hand the evidence before the world at the present time is that the principles of life in the sanatoria are by far the most important, and that no minor questions should be allowed to detract from them. Dr. Muthu's book gives an excellent outline of what this kind of life should be, and is worthy of careful study by all who have reason to take an interest in the subject.

We observe on pages 43 and 134 that Dr. Trudeau's name is given as Tradeau.

Age Incidence, Sex, and Comparative Frequency in Disease. By JAMES GRANT ANDREW, M.B., M.S. Pp. xix, 439. London: Baillière, Tindall & Cox. 1909.

If we knew more about the circumstances under which predisposition to disease arises, the problem of prevention—which is the highest aim of modern medicine—would be simplified.

In recent times pathologists have been so fully occupied with the search for particulate causes of disease in the realm of the infinitely minute, that the great importance of predisposition, without which particulate causes of disease are comparatively speaking inoperative, has been obscured and overlooked.

Among the predisposing causes of disease, age and sex are important factors. The time is now ripe for the scientific study of this part of the subject, regard being had for generalised considerations, as well as for items of detail. In this sense there is here an opening for pioneers, since almost everything remains to be done.

The census reports, the annual reports of the Registrar-General, the reports of the Lunacy and Prison Commissioners, and other publications of this kind, will furnish valuable material.

The annual reports of the registrars of such hospitals as have for a series of years published detailed analyses of their cases, and specialised monographs dealing with this aspect of the subject, may also be relied on for furnishing useful data.

It is with this latter class of publication that Dr. J. G. Andrew's work must be classed.

This is the age of detail, and Dr. Andrew has made no attempt to overpass it by rising from details to generalised considerations.

His work is a statistical analysis of 42,603 consecutive cases under treatment at the Glasgow Western Infirmary, so as to show the age and sex incidence of disease, as well as its comparative frequency.

Although the gross total of cases seems large, yet when the items are split up under their various headings the numbers are nearly always too small to furnish reliable averages.

This is, of course, a serious shortcoming, and it is owing to this lack of "massif" in the totals that the analyses often seem to be over-elaborated.

The work would have been of greater scientific value if the analysis had been based on at least 250,000 cases, and this might well have been effected if Dr. Andrew had availed himself of the records of other hospitals, and of monographs in which large numbers of cases of this kind have been massed and analysed.

The future investigator, who will doubtlessly make this his task, will have reason to be grateful to Dr. Andrew for having facilitated a stage of his arduous undertaking by the publication of the present valuable statistical compilation.

Semmelweiss: His Life and his Doctrine. By Sir WILLIAM J. SINCLAIR, M.A., M.D. Pp. x, 369. Manchester: At the University Press. 1909.

This account of the life and struggles of a man who must be ranked among the greatest of the pioneers of medical discovery should be read by every member of the profession. It gives the history of a discovery which as an instance of logical deduction and research work patiently carried out under circumstances of unusual difficulty, owing to official prejudice and professional jealousy, has been seldom equalled. It may be objected that the work suffers from prolixity, and that personal and political quarrels receive undue attention. We think, however, that without these details, petty as many of them may seem, it is hardly possible to appreciate the almost insurmountable obstacles placed in the way of Semmelweiss by political influence, the

personal jealousy of his superiors, and too often by the deliberate insubordination of inferiors. That Semmelweiss did not push his doctrine by the wider publication of his discovery and its results is a fact which cannot be regretted too deeply, as its acceptance would undoubtedly have saved many thousands of lives. At the same time, his diffidence is not surprising when we find that he was regarded by practically the whole of the continental obstetric world as a heretical, if not a blasphemous innovator, whose discovery, supported as it was by reasoning which to-day seems absolutely conclusive, to the official mind of his time was not deemed worth detailed examination.

Every medical practitioner who desires to read an account of a discovery made by continuous, accurate, clinical observation and logical reasoning from facts should read this volume as an illustration of the way in which research should be conducted. The gradual evolution of the doctrine and its dramatic confirmation by the tragic death of Kolletshka is a splendid illustration of continuous cumulative observation and accurate reasoning. The details given of his life-long battle against every kind of difficulty, from open opposition of equals and superiors to the veiled hostilities of ignorant and treacherous subordinates, are a lesson to all of us to-day that in the practice of new principles, even if based on actual evidence and reasoning, opposition of the kind mentioned must be expected and overcome, and also that the natural conservative instincts of humanity generally impose much strain on the loyalty of subordinates who have to carry out the details involved in the practice of new principles. Another lesson we may read in this volume is not to be too ready to condemn as new-fangled notions methods to which we have been hitherto unaccustomed, and to remember how the conclusions of Semmelweiss, though treated with contempt by his contemporaries, have since been proved to be absolutely incontrovertible. The most notable feature in the " doctrine " is this, that if Semmelweiss, instead of stating that puerperal fever was due to contagion from dead or decaying animal matter, had been able to state that it was due to the *causes* of decay and death in animal matter, namely micro-organisms, the position of his doctrine would have been entirely unassailable. As the author says, the distinction between these two points is a mere logomachy, and speaking broadly, the doctrine of Semmelweiss is as true to-day as it was at the time of its discovery.

A System of Operative Surgery. Edited by F. F. BURGHARD, M.S., F.R.C.S. Vol. III. Pp. xxxii, 764. London: Oxford Medical Publications. 1909.

This volume is one of the best of the series. The subject of the removal of tuberculous glands is by Mr. Harold Stiles,

and it is notable for the very exact anatomical description and the beautiful illustrations of the same. The incisions necessary in the neck are carefully planned so as to avoid the unsightly scars so often seen in front of the sterno-mastoid. The surgery of the spleen is by Messrs. Moynihan and Upcott, and that on the thyroid gland by Mr. Berry. The latter is perhaps somewhat marred by the inclusion of such procedures as injection of thyroid tumours and exothyropexy at some length, which the author would never employ himself. The statement that chloroform is to be the anæsthetic of choice in extirpation of thyroid tumours is one which will provoke much criticism. The questions, too, of surgical treatment of exophthalmic goitre, the rôle of the parathyroids and thyroid grafting, are not mentioned.

Mr. Mayo Robson deals with the surgery of the bile passages and the pancreas, and it is rather remarkable that liver surgery, apart from that of the bile-ducts, is omitted. The conditions which require or justify removal of the gall-bladder are considered to be very limited. Both these chapters form a very full and yet concise account of the subjects of which they treat.

The chapter on brain surgery is by Mr. Rawling, and it is consistently good. The hand trephine and Gigli's saw are considered to be the most useful instruments in opening the skull. Mr. Thorburn writes on spinal surgery, and his account of the whole subject is the best with which we are acquainted. Dr. David Newman writes on the operations on the kidneys and ureters, and, whilst the note of personal opinion from such an authority is of great importance, it involves an unfortunate omission of much that represents the current teaching of the day. This is notably the case in the instance of methods of determining the functional efficiency of both kidneys, which are not mentioned. Suppurative lesions of the kidney are treated on very conservative principles, nephrotomy being advised as the method of choice in such cases.

Mr. Thompson Walker deals with operations upon the bladder, and all the details given, both of operative technique and after-treatment, are very valuable.

Mr. Freyer's articles on vesical calculus and the surgery of the prostate call for no special comment. The latter is characterised by the same undue optimism that the author has always displayed in writing on this subject. To say that "the success attending suprapubic enucleation means an absolute cure, the patient regaining the power of retaining and passing urine naturally without the aid of a catheter as well as ever he did," is not in accordance with the facts as ordinarily seen by operating surgeons.

Mr. Walker's article on the urethra is especially valuable because of the large number of statistics and references to operative results. The favourable mention of the excision of

strictures is to be noted, as it is to be desired that this method should be much more widely practised than it is. Mr. Burghard's article on the male generative organs contains a good account of the operations for hypospadias, but the meagre account of the operations for malignant disease of the testis, without any reference to the removal of the lymphatics, is a matter for regret. The article on operations for cancer of the breast, by Mr. Stiles, is quite up to his usual standard, but other operative procedures on the mamma are very briefly noticed.

The volume concludes with an article by Mr. Godlee upon thoracic operations. The methods of positive and negative pressure are discussed and illustrated, and the newer operations, *e.g.* cardiolysis and the removal of pulmonary emboli, described. This section would be still more valuable if it were not so brief.

Drei Jahre Gallenstein Chirurgie. Von Prof. Dr. HANS KEHR, Dr. LIEBOLD, und Oberarzt Dr. NEULING. Pp. xiv, 722. München: J. F. Lehmann. 1908.

This book is divided into a first part of 492 pages, giving the clinical histories of 300 patients submitted to laparotomy for affections of the biliary system, mostly cases of gall-stone, and a second part of 200 pages, in which the preceding cases are analysed and classified, and the whole subject of gall-stone surgery is thoroughly and scientifically considered. The case-records are exceedingly well indexed, so that the reader can rapidly refer to those which illustrate any variety of operative procedure he particularly wishes to investigate, and nearly all types of operative procedure are exemplified.

The case-records are not mere abstracts, but give in full all important details, with the exception of the permanent after-results. The latter cannot be given, for all the operations were performed in the three years 1904 to 1906, and too little time has elapsed for the permanency of most of the results to be fairly tested.

We shall not attempt here to summarise in any way the author's conclusions, but we have no hesitation in saying that in our opinion the book is an exceedingly valuable addition to the literature of the subject with which it deals, and we strongly advise all surgeons who are called upon to deal with gall-bladder affections to give it their earnest attention.

In our opinion the reader will find it best to begin by reading the general account of the cases and of gall-stone surgery in Part II, and to refer to the case-records of Part I, as occasion demands, for examples of the application of the various operative methods described.

Traité international de Psychologie pathologique. Edited by Dr. A. MARIE and Collaborators. Tome I. Pp. vii, 1,028. Paris: FÉLIX ALCAN. 1910.

This book of over a thousand pages is a review of the scientific, social and philosophic aspects of morbid psychiatry, prepared by Dr. A. Marie and eminent collaborators of various nationalities. It is the first of three volumes, already in the press, needed to complete the scheme set forth; the other two will be issued by the end of the current year.

In the introductory chapters is a plea for the inclusion of morbid psychology as an integral part of neuro-biology, made by Dr. Grasset and endorsed by Dr. Greco, who also gives a critical and historical survey of the gradual development of psychiatric knowledge, the social relationships of morbid psychology in regard to marriage, education, hygiene and prophylaxis. Degenerescence and physiological experiment on animals are then treated of. Very complete articles follow, which deal with anthropology in relation to insanity; with studies in anatomy and function; chemistry of brain substance; the application of laboratory methods, metric and otherwise; clinical examination of patients; morbid anatomy and histology of brain; peripheral and visceral nervous systems; psychic evolution; backward children and criminal lunacy.

The length and complexity of the numerous essays renders any detailed notice of this volume impracticable. The names of its contributors constitute a sufficient guarantee for the general excellence. Especially valuable is the well-illustrated article on lesions of the cortical nerve cells, by Marinesco. An issue in English of this work would be welcome, but even failing this, it should be in the hands of all workers in morbid psychology. Dr. Marie is to be congratulated on this instalment of his scheme. It is well produced.

Publications of the Research Defence Society. Selected by the Committee. Pp. xv, 216. London: Macmillan and Co. 1909.—Even these twelve collected publications afford testimony sufficiently convincing to anyone with an open mind as to the claims of British Scientific Research, involving experiments on animals, to rank with the most humane of philanthropic efforts. The opening address of Lord Cromer, and the evidence of Lord Justice Fletcher Moulton before the Royal Commission are invaluable to the lay reader, because the value and justification of experimental research is plainly set forth by laymen who are able to apply the faculty of criticism developed to a high degree, while the contributions of others, such as those of Professor Osler on "Yellow Fever and Malaria," and Sir David Bruce on "The

Extinction of Malta Fever," will be appreciated and understood by both lay and medical readers.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Second Series. Vol. XIV. Q—Rzehak. Pp. 829. Washington: Government Printing Office. 1909.—The present volume of this most useful work contains 10,019 author titles, 4,065 subject titles of separate books and pamphlets, and 31,370 titles of articles in periodicals. It shows that even a new therapeutic agent like radium is already possessed of a considerable literature. The librarian is to be congratulated on the regularity with which these volumes appear, for the labour expended in the preparation of this indispensable work must be extremely great.

Deuteronomy Smith. By a Student of Medicine. Pp. 68. Edinburgh: E. and S. Livingstone.—This little book is the story of a medical student at Edinburgh, told in a style meant to imitate the stately language of the Old Testament. It is profusely illustrated by rather amusing sketches of the hero's progress and adventures. The tale has no special plot, and its only claim upon one's notice is the method of narration, which no doubt will cause merriment to some of those who have no objection to a paraphrase of a great classic—a form of entertainment which, personally, we do not much enjoy.

Roller Skating for Health and Pleasure. By J. WILLIAMS (professional and expert), and a Doctor of Medicine (amateur and enthusiast). Pp. 62. Bristol: John Wright & Sons Ltd. 1910.—This is a small manual written in praise of roller skating, and as a guide to beginners. The expert has made himself "responsible for the facts, whilst to the amateur has fallen the duty of transcribing these facts into words" (Preface). The illustrations are good, and indicate the kind of recreation to be obtained at a skating rink, no less than five of them being vivid representations of various tumbles; whilst others represent some of the phases of social intercourse that may be enjoyed. Some of the photographs are charming. A strong case is made out for the healthiness of this form of amusement, and one fully agrees with the medical author when he claims that it is better to skate than "to sit for most of the day with one's legs under a desk or in a drawing-room chair." This latter position must certainly be irksome. The effects on the muscles and joints is stated to be excellent, and we are reminded that "in the back there are 26 bones, 75 joints, 150 ligaments and about 290 muscles"; so there is really a chance for almost anyone to twist something, and surgeons need not take a gloomy view of the general outlook. As a guide to roller skating the book deserves praise for its concise and clear directions and for the useful diagrams. We could wish that our friend M.D. had made some suggestion as to

an improvement in the atmosphere ot these rinks. We have, whilst watching and taking part in this exercise, found the air very oppressive, and this feeling was not, we believe, entirely due to the number of people, including M.D. himself, who fell upon us.

The "Wellcome" Photographic Exposure Record and Diary. 1910.—This new edition of this very useful little pocket-book is quite up to the standard of its predecessors, and contains several new features, such as "improved methods of obtaining wide variations in colour of sulphide-toned prints," and attention is drawn once again to the wide range of colour obtainable on lantern slides by varying the exposure and the strength of the developer. Both novice and expert will find this pocket-book full of valuable information, and we can cordially recommend it to the notice of every photographer.

A System of Medicine. Edited by Sir CLIFFORD ALLBUTT, K.C.B., M.D., and HUMPHRY DAVY ROLLESTON, M.D. Vol. IV, Part II. Pp. xii, 566. London: Macmillan and Co. Ltd. 1908.—It seems a little peculiar to have a separate volume in *A System of Medicine* devoted to subjects so surgical as diseases of the throat, nose and ear. In the original edition of the *System* the articles on affections of the nose and throat were in vol. iv, which contained also the articles on diseases of the liver, pancreas, kidneys, etc. The former articles in the present edition have been considerably extended, and new articles on direct laryngoscopy, bronchoscopy and œsophagoscopy, by Mr. Waggett, and on diseases of the trachea, by Sir Felix Semon and Dr. Watson Williams, have been inserted. Also the subject of diseases of the ear has been dealt with in a series of articles by several writers under the general supervision of Dr. M'Bride. As now arranged, the book before us is a complete and authoritative treatise upon diseases of the throat, nose and ear, written by well-known specialists, and as such will appeal to many readers outside the circle of those more particularly interested in purely medical subjects, and we commend the wisdom of the editors in deciding to devote one complete part of the *System* to these subjects, a part which is separately obtainable. The utility of the work is enhanced by many coloured plates, which are in all respects excellent.—Vol. VI. Pp. xvi, 861. London: Macmillan and Co. Limited. 1909.—In this edition the editors have wisely devoted one whole volume, and one volume only, to the discussion of circulatory disorders. This is a great improvement, without any drawbacks, upon the arrangement which in the first edition gave parts of two volumes to these subjects. Some changes in the authorship of the articles have inevitably occurred. Dr. Dreschfeld and Dr. A. E. Sansom have died, and their contributions on acute simple endocarditis and diseases of the mitral valve have been revised by Dr. Thomas McCrae, of Baltimore, and Dr. George A.

Gibson. Professor W. H. Welch's articles on thrombosis and embolism have been brought up to date by Dr. Rolleston, and the introductory section on the physics of the circulation, originally written by Professor Sherrington, has been entrusted to Dr. James Mackenzie, whose influence on the study of cardiac disease finds further expression in a number of graphic records scattered throughout the book. There is one quite new section on Stokes-Adams Disease, by Professor Osler and Dr. Arthur Keith, which constitutes the best account of the subject in medical literature. Sir Clifford Allbutt has rewritten his article on " Overstress of the Heart," including much valuable evidence as to the effect of athletic effort upon the heart, collected by Dr. R. W. Michell, of Cambridge. The learned writer's opinion is to the effect that muscular exertion has been over-estimated as a factor in cardiac strain. Most of the sections are admirably up to date, and it is difficult to find any omission of importance, except in one or two which are perhaps unduly conservative. The whole volume is a practical contradiction of the theory that medical writers must take no account of style ; it is delightful writing throughout, from the direct, business-like paragraphs of Professor Osler to the leisurely, classical essays of his Cambridge colleague. It is, indeed, an admirable example of the width of outlook and soundness of judgment for which English medicine is justly noted.

The Causation of Sex. By E. RUMLEY DAWSON. Pp. xii, 196. London: H. K. Lewis. 1909.—This little work, quite apart from the author's theory, is well worthy of perusal on account of the very exhaustive account of the work of different authors on reproduction, and the number of interesting and curious cases quoted. As regards the theory itself, in spite of the evidence produced by the author in its favour, we must still maintain a non-committal attitude, and on the whole regard it as non-proven. The interesting cases quoted by the author would be convincing were it not that the numbers quoted are so small in relation to the number of male and female births respectively that the possibility of the occurrences being merely coincidences cannot be lost sight of. We do not consider that the case of the woman who bears a family of both male and female children after unilateral ovariotomy or öophorectomy can be dismissed so easily as the author seems to assume by saying that in every such case portions of ovarian tissue were left behind; so many of these cases are on record that we should be justified by the author's argument in saying that ovarian tissue always exists in the utero-ovarian ligament, or that all operators are more or less inexpert. If this is the case, how is it that bilateral öophorectomy produces menstrual cessation, which is shown by the author to be practically identical with cessation of ovulation? Obviously it cannot be assumed that all bilateral oophorectomies

are perfect operations if all unilateral are imperfect ones. The margin of difference which may enter into the statistical presentation of a calculation in which the total numbers are approximately equal is obviously very wide, as witness the falling of heads or tails in a large number of tosses. In a few hundred such examples, without the law of averages being in the least disturbed, a run of one variety may occur, which may seem to prove that one or other is more frequent; and although the author's evidence is interesting, and his deductions well drawn, we consider that to prove that one ovary produces males and one females requires much larger statistical figures.

Consumption, its prevention and home treatment: a guide for the use of patients. By H. HYSLOP THOMSON, M.D. Pp. 75. London: Oxford Medical Publications. 1910.—The educational influence of the sanatorium is greatly aided by the literature proceeding therefrom. Dr. Thomson, writing from the Liverpool Sanatorium at Frodsham, remarks that "not only does it aid the consumptive in his personal conflict with the disease, but it takes an active part in the great war of prevention, which has its battle-ground in the homes of the people." The principles and practices of open-air home treatment are described, chiefly for the benefit of those who are waiting for admission, and also for those who, having left the sanatorium, wish to continue home treatment on the lines of a well-conducted sanatorium for consumptives. This little book of 75 pages gives an excellent outline of what the consumptive requires.

The Expectation of Life of the Consumptive after Sanatorium Treatment. By NOEL D. BARDSWELL, M.D. Pp. 130. London: Oxford Medical Publications. 1910.—The medical superintendent of the King's Sanatorium at Midhurst here gives his quota of evidence as to the value of sanatoria for consumptives. The evidence consists of the careers of 241 patients discharged during the years 1900 to 1905, whose subsequent life history is recorded. They indicate that permanent recovery may be looked for in from 70 to 80 per cent. of cases of early consumption, in from 40 to 60 per cent. of cases of moderately advanced disease, and in some 8 to 10 per cent. only of the much advanced cases. The author concludes that "sanatorium treatment must be regarded as a relative cure only. With great reservations . . . it can be considered to be curative in a high degree. As regards the far advanced cases, it must be recognised as a palliative, and as a means of prolonging life." It postpones the inevitable indefinitely so far as tuberculosis is concerned.

The Influence of Strong, Prevalent, Rain-bearing Winds on the Prevalence of Phthisis. By WILLIAM GORDON, M.A., M.D. Pp. xiv, 108. London: H. K. Lewis. 1910.—This subject has engaged the author's attention for a period of ten years, and he

gives in this volume the collected evidence in favour of his view that strong, rain-bearing winds have a prejudicial effect on phthisis. Commencing his observations by a careful analysis of the prevalence of phthisis in the rural districts of Devonshire, he found that the mortality was nearly five times as great in the parishes exposed to west and south-west winds as amongst the sheltered parishes. Again, the streets of Exeter gave a similar result, inasmuch as the death-rate in those streets which were exposed to south-west, west, or north-west winds was found to be twice, or even four times as great as that in the streets sheltered from these winds. By extending his investigations farther afield, he found that from all quarters of the globe he obtained extraordinary confirmation of the conclusions derived from the home area. A careful consideration of the facts obtained leads to the conclusion that such a mass of evidence, carefully sifted, yet so constant in its indications, cannot be set aside as fallacious.

Mind and Health: the Mental Factor and Suggestion in Treatment, with special reference to Neurasthenia and other common nervous disorders. By EDWIN ASH, M.D. Pp. 116. London: H. J. Glaisher. 1910.—Another handbook for students and practitioners of medicine who require a brief account of the practical uses of suggestion in treatment, and for students of psychology who are interested in the application of that subject to the healing art. Books of this kind, and better ones, are so numerous that we cannot understand for what purpose this one was written.

Nature's Help to Happiness, or Ground Treatment. By JOHN WARREN ACHORN, M.D. **Nervousness: a brief and popular review of the moral treatment of disordered nerves.** By A. T. SCHOFIELD, M.D. London: Rider's Mind and Body Handbooks. 1910.—It would be a misfortune that any neurasthenic patient should read these books, as they would effectually prevent any endeavours of the physician to cure by suggestion. We think that a thrilling novel would be far more useful. For whom, then, are they intended?

Air and Health. By RONALD C. MACFIE, M.A., M.B. Pp. vii, 345. The New Library of Medicine. London: Methuen and Co.—The book deals with the physical and chemical properties of air, particularly with reference to health and diseases. The physiology of respiration is considered in its practical bearings, and chapters are devoted to the question of climate and to relevant questions of dust, fog, germs, air-borne epidemics, etc. Ventilation is fully discussed, both in its private and public aspects. Dr. Macfie has written several most interesting books. This, his latest, is rather from the point of view of a sanatorium physician, and accordingly he concludes with a chapter on the open-air treatment of consumption and open-air schools. He

believes that "nothing will so increase the happiness, the health, the moral and mental sanity of the nation as open-air schools." Two very complete indexes of names and of subjects complete a volume which is full of interesting details and replete with knowledge of all kinds. There is not a dull page from cover to cover.

Aseptic Surgery. By CHARLES BARRETT LOCKWOOD, F.R.C.S. Third Edition. Pp. xii, 275. London: Oxford Medical Publications. 1909.—This book is too well known for much to be said as to its contents. The details of surgical technique are expounded by one who has been in the forefront of asepsis since its application to modern surgery. The first edition was the first English discourse on the subject which really attracted the attention of the mass of operators to the principles of Listerism. It was so complete that it has been necessary to add but little since. We are rather surprised that the preparation of the skin by iodine, which is very extensively used under certain circumstances, has not been mentioned, and the same remark applies to the preparation of catgut by the iodine method or by boiling in Xylol. All questions of asepsis are a consideration of details, and anyone who wishes to look these up cannot do better than consult this work.

A Synopsis of Surgery. By E. W. HEY GROVES, M.S., M.D., B.Sc., F.R.C.S. Second Edition. Pp. viii, 579. Bristol: John Wright and Sons Ltd. — No book on surgery could be more condensed than this one is and at the same time contain such an excellently arranged array of facts. The author has thoroughly covered the whole ground. It is well balanced throughout, no section being given undue prominence. A student just going up for an examination has often difficulty in finding out his weak points; with this in his hand he can rapidly run through the whole range of surgery, and on finding some subject on which he feels doubtful he can easily refer to a larger work. Treatment, and especially after-treatment, is dealt with very tersely; the latter is a subject examiners are constantly asking. There is no mention of when patients may get up after operations, or when a fractured leg may be put to the ground. No method of treating fractured patella is mentioned except wiring "For deformities of the legs after rickets has ceased osteotomy will generally be required" seems to us a little drastic, and the same might be said of a radical mastoid operation for acute mastoiditis. The book is everywhere up to date, and should be very useful for revision work.

Emergencies of General Practice. By PERCY SARGENT, M.B., B.C., and ALFRED E. RUSSELL, M.D., B.S. Pp. xi, 364. London: Oxford Medical Publications. 1910.—This book claims to be a collation of facts for easy reference and a record of personal

experience. Its form is good, the illustrations are of variable excellence, and it includes subjects which can hardly be regarded as emergencies of general practice, such as the operative treatment of gastric hemorrhage, fractured patella, and general peritonitis. It will form a useful addition to the numerous works of reference of its class.

The Nutrition of the Infant. By RALPH VINCENT, M.D. Third Edition. Pp. xxii, 342. London: Baillière, Tindall and Cox. 1910.—That this book has in seven years reached its third edition is a welcome proof of the interest taken in the feeding of infants by the medical profession in this country. Dr. Vincent writes with authority about matters which are constantly being put into practice in the treatment of the patients under his care at the Infants' Hospital. The book is a detailed exposition of the Rotch system of feeding infants by milk, the exact proportions of whose principal ingredients are stated in prescriptions which vary according to the individual needs of each baby; a scientific system as opposed to rule-of-thumb methods. Dr. Vincent has carried out his task with the greatest thoroughness; and his book, though a shade too scientific and too insistent on the particular method he advocates, is the best exposition of that method and its applications which we possess.

Handbook of Diseases of the Ear. By RICHARD LAKE, F.R.C.S. Eng. Third Edition. Pp. xii, 248. London: Baillière, Tindall and Cox. 1910.—The third edition of this excellent handbook has been largely rewritten as well as increased in size, so as to be virtually a new book, and as the additions include most of the modern advances in aural surgery, it gives us in a handy form a valuable guide to the present-day knowledge of diagnosing and treating diseases of the ear. Among the additions we notice a useful table of six subdivisions of Rinne's test, by which we may group the various conditions affecting the hearing of a deaf person, and make them pathognomonic of those affections; a good account is also given of oto-massage and its various methods of application, especially in sclerosis, for which the author specially recommends it. The book contains some excellent coloured plates as well as numerous original illustrations, some of which we notice were from drawings supplied by Mr. Harold F. Mole.

Errors of Refraction. By CHAS. BLAIR, M.D., F.R.C.S. Second Edition. Pp. 106. Bristol: John Wright & Sons Ltd. 1910.—A small straightforward exposition of the subject, but too academic to be of much use to the practitioner who knows but little of the methods and who essays to test for glasses. The author would have greatly added to its value if he had included a chapter on the common pitfalls which a beginner is so liable to come across, such as overlooking very faint, old nebulæ, and spending useless time in trying to do a retinoscopy, or ordering

presbyopic glasses to a patient without recognising early cataract, and many others which no doubt would be readily called to mind.

Landmarks and Surface Markings of the Human Body. By LOUIS BATHE RAWLING, M.B., B.C., F.R.C.S. Third Edition. Pp. viii, 96. London: H. K. Lewis. 1908.—The third edition improves on the second by the insertion of several new illustrations. The author has resisted the temptation to enlarge the scope of the work, and we think is to be commended for doing so, as this is one of the best small readable text-books on the subject, and will prove very useful and reliable.

Cerebral Congestion and Tight Neck Clothing. By WALTER G. WALFORD, M.D. Pp. 26. London: H. K. Lewis. 1910.—This booklet, written by a retired medical man of large experience, calls attention to an insidious cause of many disorders. That neck constriction may be a cause of many troubles other than those of the head is the contention of the author, and he gives many cases in proof of his theorem. The loosening of a button is so easy, and the discomfort of tightness is so decided, that one needs little persuasion to adopt his theory and the practice resulting therefrom.

Henry Phipps Institute. Philadelphia. 1908 and 1909.—The fourth and fifth annual reports of this Institute for the study, treatment and prevention of tuberculosis contain accounts of the general and special clinical and pathological work done by members of the staff at the Institute during the years. They are edited by Dr. Joseph Walsh, and are a record of much good work in a variety of subjects, *e.g.* the bone marrow in pulmonary tuberculosis, the opsonic index, fibrosis, pneumothorax, etc.

"The Prescriber." Vol. iii. Edinburgh: 137 George Street. 1909.—This monthly journal, dealing with therapeutics, pharmacology and the newer remedies, edited by Thos. Stephenson, Ph.C., F.C.S., is the latest addition to our exchange list, and we welcome it as an aid towards the almost impossible task of eliminating the good from the useless of the new remedies which are constantly pouring in from the makers and venders of new products. We are told that the ingenuity of the makers of new remedies during 1908 seems largely directed towards the invention of new names; this is harmless in itself, but if the new name is simply a disguise for a familiar drug in order that it may be obtained from one source only, then these names may well be forgotten and ignored. Secret remedies are not to be encouraged, and this journal will do all in its power to favour legislation restricting the traffic in such goods. We wish the editor all success in his endeavours, and our readers will find much useful information in the pages of this new exchange.

Editorial Notes.

Honorary Medal, R.C.S.
(*Vide* p. 190.)

THOSE of us who appreciate the advantages of a large medical library know how indispensable it is to have bibliographical facilities of access to its resources. It would be difficult to name any one who has more benefited his fellows in this respect than Dr. Robert Fletcher, whose work in connection with the *Index Medicus* and *The Index-Catalogue of the Library of the Surgeon-General's Office* at Washington is beyond all praise. As Dr. Fletcher is a Bristolian by birth and was a student at our Infirmary, we should very heartily join in the congratulations accorded to him upon the receipt of the Honorary Medal which the Royal College of Surgeons of England has recently by a graceful act bestowed upon him in recognition of his labours. Dr. Fletcher has shown from time to time a keen interest in the medical work of his old neighbourhood.

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Proprietary, Patent and Secret Remedies.

THE recent discussion of this subject by the Therapeutical and Pharmacological Section of the Royal Society of Medicine (vide *Proceedings*, March and April, 1910) will have done much good in directing the attention of prescribers to the great abuse of doubtful remedies outside the official pharmacopœia. Dr. Dixon remarks that, after a long period of something like chaos in the drug world, "now, when the dawn of a new age is thick upon us, and empiricism is being replaced by rationalism, it is hardly a matter for wonder that there are those of us who would substitute the laboratory for the bedside in all pertaining to therapeutics; others who would rely entirely on the bedside; and a third group of ardent and enthusiastic believers in all new products and methods of treatment of diseases. Some regard baths, mineral waters, electricity, or radium as the panacea for all

diseases, and others put their trust in the lactic-acid bacillus, calcium, or whatever other drug is in vogue at the time." In spite of the large number of new drugs which the chemical manufacturers and the enterprising journalists and advertisers are constantly pouring upon us, there is a growing tendency to trust to all other methods of treatment rather than drugs, which may be left to be distributed by the advertising druggist and taken on his advice.

Now the proprietary element has been the great source of our difficulties. Many of these combinations are admitted to be an improvement on the crude mixtures which are often prescribed in a haphazard way, the result of the combination being untested except by the unfortunate patient on whom it is bestowed, whereas the manufacturer, who has expended much time and care in evolving his drug or his combination of drugs, commonly produces a something which commends itself empirically to the patient if not to the doctor. By giving a distinctive name to his product and by showering samples broadcast amongst those whose assistance is needful, he persuades the medical profession to prescribe his substance under its fancy name which ensures his proprietary claim. Before long some other manufacturer wishes to share in the profits, and he issues a precisely similar drug under a new name, and claims that his preparation is superior. Hence the chaos which the much-abused *British Pharmaceutical Codex*, published in 1907, did its best to remove. It gave the composition of certain substances which had been known under trade names, and immensely simplified the work of the druggist in dispensing. It was intended to be a compendium of medicines for which there might be any demand, and it enabled the dispenser to make for himself a large number of combinations which had previously been proprietary. It is now stated that "the *Codex* has confused prescribers, was pernicious to the public, and it violated the first principles of literary copyright." We think that this attack on the *Codex* was much to be deprecated, but the critics admit that its errors were due more to want of thought than to want of knowledge. It will be impossible for the general physician to avoid the use

of proprietary articles entirely, but much could be done if the *Codex* came into more general use. It seems to be impossible to prohibit from the general prescribers' use all drugs and combinations not included in the *Pharmacopœia*. This being granted, the *Codex* should be a friendly auxiliary, and it cannot fail to be of great use both to the dispenser and the prescriber.

Meanwhile Dr. Dixon reminds us "that the cure for these evils lies in our own hands. We should never prescribe a secret remedy; if it has any beneficial action it must be due to one or more well-known drugs, which can be easily ascertained. I think we ought not to prescribe a compound medicine of a proprietary nature, especially such things as compressed tablets, in the original packages: it is a direct means of encouraging self-drugging. We ought not to prescribe a drug with a registered fancy name unless it is held by Letters Patent, but refer to its synonym, and prescribe it by its chemical name, unless distinct reasons exist for prescribing the original product."

These are suggestions which we should do well to remember, and so simplify the work of the dispensing chemist, who must often be driven to distraction in endeavouring to comply with the wishes of the prescriber.

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L'Enseignement Médico-mutuel International.

It will be remembered that last summer many of us had the gratification of welcoming a party of the International Postgraduate Society, when they included Bristol in their annual tour. Shortly after the time of that visit, Dr. Etienne Bazot, the President of the Association and Secretary-General of the French National Committee, was very seriously ill. We now have the pleasure to congratulate him on his recovery, and trust that he may long be spared to carry on the work of this prosperous Society, of which he was the founder. We have received the first three numbers of the *Journal* of the Society for this year, and hope to continue to receive the monthly issue in exchange for our own *Journal*. The March number contains the first chapter of the Compte-Rendu of the Voyage d'Etudes of 1909 to Angleterre, Ecosse,

Irlande. An interesting account of the reception of the Society by the municipality of Boulogne gives us the valuable hint that champagne is an excellent preventive of sea-sickness.

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Edridge Green's Lantern Test.

At a recent meeting of the Society Mr. Cyril H. Walker called attention to the recent improvements in tests for colour vision. It has, of course, for a long time been notorious that the use of Holmgren's wools as the accepted test for colour vision is in several respects unsatisfactory. Used as originally directed, they do not in the least resemble or reproduce the conditions at sea or on the railway where accurate colour vision for small objects (or objects subtending a small visual angle) is most needed. Not that Holmgren's wools are of no value, or have been entirely superseded. They are convenient for rapidly detecting gross colour defects, and also for ascertaining that candidates have a correct knowledge of colour nomenclature, such as is required for the proper recognition of flags and signals. One respect in which the wool test is a failure lies in the fact that the candidate is guided to a correct selection by being able to compare any doubtful colours with the rest of the colours in the bundle. For example, a candidate with "shortening" (*i.e.* imperfect appreciation of) the red end of the spectrum might group the red wools together correctly. He would see that they did not agree with the hue of any others of the wools before him, and would infer that they were what others called "reds" without his being able to appreciate the red colour himself.

For scientific purposes the spectrum is undoubtedly the most accurate test of colour vision, since it is possible to record the exact wave-length of any colour which is imperfectly seen. Most of the spectrum tests involve costly and elaborate apparatus, but Dr. Maitland Ramsay (Ramsay's test) has recently devised an instrument which is in many respects ideal. Essentially it consists of a tube about a foot long with an eye piece at one end and a 16 c.p. electric lamp at the other. In the middle is a diffraction grating, suitably illuminated by two adjustable slits

near the lamp, by which two similar spectra are produced. By means of movable shutters any portion (for example, a narrow strip of green) can be isolated in the lower spectrum. The patient is then told to move similar shutters by means of a screw with a milled head until an exactly similar patch of green has been isolated in the upper spectrum. Any defect is recorded on two graduated dials on the top of the tube. The objections to this instrument are, first, that the conditions of the test are quite unlike those which exist in actual service; secondly, the use of the instrument requires considerable intelligence on the part of the subject who is being tested, and stupidity might rank as a colour defect; further, it is not very easy with it to convince a third party of the candidate's faulty vision.

To Dr. Edridge Green belongs the credit of having invented what is after all by far the most practical, if not the most scientific test for colour vision. More than twenty years ago he pointed out the necessity of a better test than was afforded by Holmgren's wools. Without discussing his theories as to colour vision, it may be said that he assumes that the ordinary eye is "hexachromic," *i.e.* can distinguish red, orange, yellow, green, blue and violet as being six different kinds of colour. His first step, therefore, was to select most carefully glass of suitable colours so as to transmit rays of light from certain known portions of the spectrum, chosen of course with a view to detecting errors of colour vision. For example, he uses two "reds," one of which transmits some green rays as well. Those who have a shortened red end of the spectrum will very likely not appreciate the red and call the colour green. The latest model of his apparatus consists of an opaque disc about 8 inches in diameter with a circular aperture near its periphery, which can be varied from about $\frac{1}{8}$ inch to $\frac{3}{4}$ inch diameter by means of a rotating diaphragm. By thus diminishing the size of the aperture the effect of a distant signal can be imitated. Behind this aperture three discs, bearing the selected test glasses, can be rotated so as to mix the colours as required (three greens, two greens and a yellow, one green, one yellow and one blue, etc.). There is, in addition, a fourth disc provided with ground and neutral tint glasses, by means of

which the effect of atmospheric conditions—rain, fog, smoke, etc.—can be imitated. The denser of these neutral tint glasses diminish the rays from the most luminous parts of the spectrum, so that a white light begins to assume a smoky orange tint. A candidate who was red-green blind might interpret this as a red or green signal. The apparatus is illuminated by an electric lamp, the light of which is reflected through the glass at the sight hole to the eye of the patient to be examined, who is seated a yard or two off. It must be confessed that a more constant source of light is desirable.

The candidate to be examined is first tested with Holmgren's wools in order to ascertain that he can name colours correctly, and to exclude him at once if he is hopelessly defective. He is then placed before the instrument and asked to name the colours as the examiner rotates the discs. The examiner can see and knows by the colours used if the candidate makes any mistakes, and the correctness of the answers can be judged by three or four witnesses standing near the candidate.

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Dr. Robert Koch.

For the following note we are indebted to the courtesy of Dr. Barclay J. Baron, who writes:—

"On Saturday, May 28th, our profession lost one of its most distinguished members by the death, at Baden-Baden, of Robert Koch.

"Graduating at Göttingen in 1866, he had crowded such an amount of successful scientific research into forty-four years of professional life as has rarely been equalled, and never excelled.

"From the time when he was appointed Medical Officer of Health at Wollstein he was ever on the hunt for a microbe as the specific cause of disease. In 1876 came his first great find—if one may so call it—when he discovered the microbe of anthrax, and thus laid the foundation of his imperishable fame. It was then that he formulated the four postulates that have ever since been regarded as essential by all workers in bacteriological research.

"In 1882, as all the world knows, he discovered the bacillus of

tuberculosis, which had long been sought for by bacteriologists. This discovery, with all the possibilities of efficient help to countless multitudes of stricken people and animals, at once placed Koch in the very forefront of medical great ones. Henceforth we classed him with Lister and Pasteur.

"With endless energy he investigated tick fever in Texan cattle, and rinderpest in South Africa, and in 1883 he definitely placed the comma bacillus as the cause of cholera. In this connection we do not forget the remarkable work of Budd, Brittan and Swayne long years before.

"In 1897 we find Koch testing Kitasato's discovery of the germ of bubonic plague, and confirming, by his researches, Manson's theory of the spread of the disease by migratory rats. One of his last inquiries was into the origin of "sleeping sickness," which he attributed to inoculation by the fly *glossina palpalis*, which obtains the germ from the crocodile.

"Following Jenner, it was natural that Koch should try and find remedies by "vaccination," and the enormous sensation caused by the announcement in 1890 that he had found a cure for tuberculosis is still fresh in our memory.

"In order to see for ourselves what was being done in Berlin, where the use of tuberculin was being tried on a huge scale, Dr. Markham Skerritt and I went to that city, armed with introductions which gave us the run of the hospitals and clinics. We saw crowds of patients exhibiting the reactions due to the injections, and we were shown healing and healed ulcerations that were said to have taken on healthy action after its use. There was such an extraordinary amount of enthusiasm on the part of all those who saw the patients—professors, hospital physicians and surgeons, and visiting medical men from all parts of the world—that it was almost impossible to take guarded views of results, although everyone knew that in tuberculosis, of all diseases, caution was most necessary. Berlin was clearly not the place—it was too near to the wonderful man Koch—to cultivate this most necessary caution. As we know, it was reserved for Virchow to quietly undermine the extravagant claims that were put forth—but we must in justice say—not by

the great investigator and discoverer himself, whose hand had been, unfortunately, forced by those in high places.

"Dr. Skerritt and I visited him, and found his flat besieged by admirers, and (I fear I must add) beggars for a phial of the new fluid. He granted us a few minutes of pleasant chat, but refused to talk of results of the new treatment, and so far as obtaining any tuberculin—he sent us empty away. He struck us as a perfect type of what a great investigator should be—calm, modest, and non-committal.

"Vaccine therapy has made great strides since those days, and the names of Behring, Wright and others come to mind at once as great living authorities; but we shall all ascribe to Robert Koch the credit of having been the pioneer in this form of treatment, the benefits of which no man can estimate."

* * * * *

Elizabeth Blackwell, M.D.

THE first woman to establish the right of her sex to enter in modern times the medical profession has recently died at the advanced age of 90 years.

Women held a well recognised position as practitioners of medicine in the Middle Ages, and several of the *matronæ*, or *mulieres Salernitanæ*, attained renown at the school of Salernum. The best known is Trotula de Ruggiero, who wrote *De Mulierum Passionibus*. During the succeeding centuries monasticism rose and laid hold on all the seats of learning in Western Europe, with the result that for nearly six centuries the professions were closed to women. About 1820 Elizabeth Blackwell was born in Bristol. When she was eleven years old her father, Samuel Blackwell, emigrated with his wife and family to the United States. For six years he struggled against adversity, then died, leaving his family entirely unprovided for. Elizabeth, who was the third of nine children, with her sisters, set up a school in New York State. In the early forties she determined to enter the medical profession, and after various rebuffs succeeding in gaining admission to the University of Geneva, U.S.A., where she eventually graduated as M.D.

In 1849 Elizabeth Blackwell returned to England, and by

the good offices of Sir James Paget was admitted to the wards of St. Bartholomew's Hospital. Of this event Lady Paget wrote (October 17th, 1850): "Well, we have our 'Lady Doctor' here at last, and she has actually attended two of James' lectures, taking her seat with perfect composure. The young men have behaved extremely well, and she really appears likely to go on her way unmolested. She breakfasted here one morning with several of our students, and last evening we had a few medical friends to dinner, when she joined us in the evening. Her manners are quiet, and it is evident her motives for the pursuit of so strange a vocation are pure and good. So let us hope she will become useful in her generation."

She lived long enough to see the barriers which she had forced apart completely broken down, until all the universities in this country, with the exception of Oxford and Cambridge, have thrown open their classes and degrees to women students. "As Cabot opened up a new world in the material sense, so Elizabeth Blackwell (to quote the *Western Daily Press*), setting out also from the city of Bristol, revealed and conquered a new world for her own sex, and broke the first links of the chain which so long had bound women to conventions in the matter of medical science." In the long list of women who have lent lustre to the records of Bristol, the name of Elizabeth Blackwell will hold an honourable place.

Notes on Preparations for the Sick.

Brussels International Exhibition.—Medical men who visit the Brussels Exhibition will be interested in inspecting the handsome exhibit of Burroughs, Wellcome & Co., which occupies a commanding position near the entrance to the Galerie de l'Industrie Britannique. Their comprehensive display includes a wide range of "Tabloid" Products, Medical Equipments, Hypodermic Syringes and Cases, Compressed Dressings, "Wellcome" Brand Chemicals, "Kepler" and "Hazeline" Preparations, "Ernutin," "Hemisine," "Soloid," "Vaporole" and "Enule" products, "Tabloid" Photographic Chemicals, etc.

Although pioneers in the pharmacy of the thyroid gland, this firm has taken yet another step forward by standardising "Tabloid" Thyroid Gland to contain a definite proportion of iodine in organic combination.

"Orsudan" and "Soamin," the new arylarsonates, are on view. These have been used with success in the treatment of syphilis, malaria and other protozoal diseases.

An entirely new therapeutic agent shown is "Lodal," an oxidation product of laudanosine (an alkaloid occurring in opium), which was first synthesised and investigated by research workers in the laboratories of the "Wellcome" Chemical Works.

Pituitary (Infundibular) Gland, a medicinal animal substance which is attracting attention in modern therapeutics, is exhibited in the form of "Vaporole" and "Tabloid" products.

A striking example of advance in pharmacy is illustrated by the fact that, being unable to obtain medicinal herbs conforming to their high standard of efficiency, this firm now grows its own on a large scale.

In addition to the pharmaceutical exhibits, there is displayed a unique collection of historical "Tabloid" Medical Cases carried by famous explorers and expeditions.

Hydropyrin.—ROBORAT COMPANY, London, E.C.—A sample of this compound Lithium Salicylic Salt has been sent to us. It is a soluble powder, crystalline, with no disagreeable taste. It contains:—

Acetyl-salicylic Acid	96.24 per cent.
With Lithium	3.76 per cent.

In half-gramme doses it should be an efficient remedy, and its solubility gives it a distinct advantage over many of the salicylic compounds. It is obviously a salicylic drug, but the lithium element may prove to be an advantage in cases of gout.

On the whole, the properties of Hydropyrin correspond with those of Aspirin, but it has the advantage of being soluble and not irritating the stomach, for which reasons patients can tolerate it more easily. Hydropyrin—like the salicyl-preparations generally—is a specific anti-rheumatic remedy, in addition it is a reliable antipyretic free from any by-effects, and in certain cases it acts well as an anti-neuralgic. Of no minor importance is the diaphoretic and diuretic action, which Hydropyrin shows in a marked degree. The average dose is 7½—15 grains, while as a maximum dose 45 grains given in twenty-four hours might be considered.

Meat Port.—BENDLE LIMITED, London, S.E.—A nutritive meat wine, prepared from old tawny port, and containing meat nutrient which is estimated to be about 7 per cent.

A wineglassful contains 3½ fluid drachms of alcohol, and about 22 grains of meat nitrogenous extract, with 70 grains of glucose.

It is very palatable, and should be of great value in cases of debility when an alcoholic nutrient is desired.

Iodine Vasogen.—E. J. REED & Co., London.—The ordinary preparations of Iodine do not lend themselves readily to absorption, they stain the skin, and at the same time harden it.

The combination with Vasogen has been found by repeated trials and chemical tests to be more rapidly absorbed than any other compound containing Iodine, whilst it may be used for an indefinite period without causing discolouration of the skin.

From the clinical experiments of Dr. Dahmen and others it has been proved that Iodine may be traced in the urine within three and a half hours after inunction with Iodine Vasogen, and that traces may be found for a whole day after.

Iodine Vasogen is prepared in two strengths, 6 per cent. and 10 per cent., the former being generally preferred for superficial induration, chronic neuritis, parasitic skin diseases, etc., and the latter for deep-seated chronic swellings, glandular enlargements and joint affections.

"Milk Stout."—ASHTON GATE BREWERY CO. LTD., Bristol.—This is a beverage which contains the carbohydrate (lactose) present in milk, and is specially recommended for invalids. We have examined a sample, and find it to be as represented, a pleasant and mildly alcoholic drink.

The alcohol was estimated, and found to the extent of 4 per cent. approximately. It can thus be taken by many persons who would find the use of stronger alcoholic preparations undesirable, and it should be a decidedly nourishing and useful beverage.

"Roncegno" (a natural arsenical iron mineral water from Mount Tesobo, Austria).—Importer: RICHARD DAVIS, 20 Maddox Street, Regent Street, London, W.—This is a naturally occurring "tonic water," and is recommended to be taken by adults in doses of one to four tablespoonfuls.

It is faintly yellow in colour, and possesses an astringent taste.

We have chemically examined a specimen, and have identified iron in the ferric state with traces of arsenic.

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the List in March.

May 31st, 1910.

American Urological Association (1) .. .. 1 volume.
J. Dacre .. .. 9 volumes.
R. Shingleton Smith, M.D. (2) .. .. .. 2 ,,

SEVENTY-SIXTH LIST OF BOOKS.

The titles of books mentioned in previous lists are not repeated.

The figures in brackets refer to the figures after the names of the donors, and show by whom the volumes were presented. The books to which no such figures are attached have either been bought from the Library Fund, or received through the *Journal*.

Achorn, J. W. .. *Nature's Help to Happiness* .. .. [N.D.]
Ash, E. .. .. .. *Mind and Health* 1910
Bardswell, N. D. .. *The Expectation of Life after Sanatorium Treatment* 1910
Blair, C. .. .. .. *Errors of Refraction* .. .. 2nd Ed. 1910
Castellani and A. J. Chalmers, A. *Manual of Tropical Medicine* .. 1910
Chalmers, A. Castellani and A. J. *Manual of Tropical Medicine* .. 1910
"D., M." .. .. *Ideal Health* .. .. 2nd Ed. 1909
Daniels and E. Wilkinson, C. W. *Tropical Medicine and Hygiene* Pt. I 1909
Degrais, L. Wickham and [—] *Radiumtherapy* (Trans. by S. E. Dore) 1910
Emerson, C. P. .. *Clinical Diagnosis* .. .. 2nd Ed. [1908]
Gordon, W. .. .. *Rainy Winds and Phthisis Prevalence* 1910
Hewer, Mrs. J. L. *Our Baby* .. .. 12th Ed. 1910
Hill, A. .. .. .. *The Body at Work* 1908
Hospital Nurse, A. .. *"Memories"* 1910
Leftwich, R. W. .. *An Index of Symptoms* .. .. .. 4th Ed. 1910
Logan, T. .. .. *Vetera et Nova* (Ed. by Q. McLennan and P. H. Aitken) .. .. 3 vols. 1910
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MEETINGS OF SOCIETIES.

Bristol Medico-Chirurgical Society.

March 9th, 1910.

Dr. JAMES SWAIN, President, in the Chair.

Dr. J. MICHELL CLARKE showed, with the aid of lantern slides, numerous polygraphic tracings illustrating heart affections. —Dr. CAREY COOMBS discussed the subject.

Mr. C. A. MORTON showed **A Stone removed from the Urethra** which had formed round a piece of wood introduced twenty-six years previously, and read notes on the case. (*Vide* p. 127.)

Dr. E. C. WILLIAMS read notes on a case of **Leukanæmia** in a boy aged 12, and showed the patient.—The paper was discussed by Drs. COOMBS, CLARKE, SYMES and WATERHOUSE.

April 13th, 1910.

Dr. JAMES SWAIN, President, in the Chair.

The following demonstrations of clinical methods were given :—

Dr. WATSON WILLIAMS demonstrated the use of the **Killian-Brüning's method of direct Laryngoscopy and Œsophogoscopy.**

Mr. C. F. WALTERS demonstrated the use of the **Cystoscope** with bladder models and water-colour drawings.

Mr. T. CARWARDINE showed a new **Speculum** for direct female cystoscopy.

Drs. MICHELL CLARKE, CAREY COOMBS and C. E. K. HERAPATH demonstrated the **Cardiac Polygraph.**

Dr. OGILVY showed a form of **Magnifying Spectacle** which avoids undue convergence.

Mr. C. H. WALKER showed **Worth's Amblyoscope** and **Edridge Green's Lamp for Colour Testing.** (*Vide* p. 175.)

Dr. STACK demonstrated (1) a method of applying **Croft's Splints,** (2) of fixing the elbow joint in an acutely flexed position, and (3) the apparatus for osteoclasia and the method of its use.

May 11th, 1910.

Dr. J. MICHELL CLARKE in the Chair.

Mr. H. F. MOLE showed a patient in whom a large post-operative **Ventral Hernia was cured by the insertion of a silver wire filigree.** The filigree was placed on the external surface of the peritoneum. There was a gap four inches wide in the muscles, which could only be very partially closed over the filigree by suturing.—Mr. C. A. MORTON mentioned a case in which he had used filigree for the cure of a large hernia extending as low as the knee in a woman. The muscular gap was about two inches across and the muscular and fascial layers extremely thin. The filigree had been placed external to the sutured muscles and fasciæ, and there had been no recurrence.—Mr. MOLE thought the deeper the filigree was placed the better.

Dr. J. O. SYMES showed a man with **Pernicious Anæmia and Ataxic Paraplegia.** The anæmia had greatly diminished under treatment during the last twelve months, but ataxic paraplegia had gradually developed.—Dr. MICHELL CLARKE remarked that in some cases of pernicious anæmia ataxy with excessive reflexes developed, and in others the reflexes were lost. The former group with spastic trouble lasted as long or longer than the latter. Both were to be looked upon as produced by the action of the poison which produced the anæmia acting upon the spinal cord; but similar cord changes might occur without the anæmia.—Dr.

SYMES agreed that the cases with lost reflexes progressed more rapidly. It was an interesting question whether the patient shown would ultimately develop into a condition with anæsthesia and flaccid paralysis. Such a course of the disease with three stages had been described, though he had not himself met with it. He had seen many cases with loss of reflexes.

Professor WALKER HALL showed, in the absence of Dr. Watson Williams, specimens obtained from a case of **Malignant Growth (Nephroma) of Ear simulating Aural Polypus.** The patient had been under the care of Dr. Williams. The man had a growth in the ear and swellings on the buttock, thorax and parietal bone. The aural growth was partially removed more than once, and in the last portion removed the speaker had found cells which resembled supra-renal cells. Later a *post-mortem* was obtained, and a large tumour found beneath the kidney capsule on one side. This was a mixed nephroma and hypernephroma. The temporal and parietal bones, both affected, were shown, and numerous sections of the tumours.

Dr. EMRYS-ROBERTS gave a demonstration of **Fleming's Modification of Wassermann's Reaction.**—Professor HALL congratulated the speaker upon the lucidity of his demonstration. One could not yet say that the test was quite reliable, but it gave fairly presumptive evidence of syphilis when positive.—Dr. NIXON said that the test might be more useful in discovering whether a patient was cured of syphilis than for the diagnosis of borderland cases, but the difficulties in the former direction were greater than in the latter.—Dr. WILLS asked if the test was reliable in the earliest stages of syphilis.—Dr. CLARKE alluded to the fact that the reaction was obtained in tabes when too late for anti-syphilitic treatment to be of use.

Fleet-Surgeon W. E. HUME, R.N., read a paper on **Public Health Administration in Hamburg.** He gave an interesting account of the thoroughly modern and scientific methods in use in Hamburg for obtaining a pure water supply, for disposing of sewage, for inspecting and slaughtering animals for food, for vaccination, and for the notification of infectious diseases.

Mr. C. CORFIELD read a paper on **Ether or Chloroform as a Routine Anæsthetic.** The routine use of ether, wherever possible, was strongly advocated by reason of its greater safety. The respiratory troubles attributed to ether were avoidable by the use of the open method of administration. The use of ether should be avoided, however, when lung disease was present.—Mr. S. V. STOCK said he had collected records of the deaths under anæsthetics which had occurred to the present date in 1910, fifty-three in number, and found that twenty-eight of the patients were anæsthetised with chloroform, ten with chloroform and ether, three with spinal injections, one with

ethyl chloride, one with chloroform and oxygen. This series formed a strong indictment against chloroform. Armstrong had found that in 2,500 ether administrations pulmonary complications had ensued within forty-eight hours in fifty-five cases (rather over 2 per cent.). The speaker advocated the administration of ethyl-chloride, of which 1 c.c. was a sufficient quantity to use, followed by ether. This was better than gas and ether, for it avoided cyanosis and the hypersecretion due to cyanosis. The danger of over-stimulation from ether had to be remembered, and for long and severe operations he thought after using ether for a time then chloroform should be given, and finally, when the operation was being concluded, ether should again be given.—Mr. CORFIELD agreed that ethyl-chloride and ether were better than gas and ether, but he had usually given 3 or 4 c.c. of ethyl-chloride. He would not give ether in cases of phthisis, and had seen bad results from such administrations.

J. LACY FIRTH.
J. A. NIXON, *Hon. Sec.*

Local Medical Notes.

BRISTOL.

University of Bristol.—FACULTY OF MEDICINE :—

EXAMINATION SUCCESSES.

F.R.C.S. ENG.—*Final Examination:* C. A. Joll, M.B., B.S. Lond.; A. J. Wright, M.B., B.S. Lond.

UNIVERSITY OF LONDON.—*Second Examination for Medical Degrees, Part I:* H. J. Orr-Ewing, J. R. Harris, C. C. Harrison, E. S. Sowerby, W. E. Taylor, G. N. Welsford. *Intermediate Examination:* Kathleen M. Cole, W. Salisbury, G. S. Applegate, (*except Pharmacology*) E. W. Wade. *Final Examination for M.B., B.S.:* A. E. Iles and P. J. Veale.

CONJOINT BOARD OF LONDON.—*Elementary Biology:* Louisa M. Lister, P. de S. Smith. *Anatomy and Physiology:* C. Kingston, H. B. Logan. *Medicine:* G. H. Griffiths, A. J. Wigmore, W. A. Reynolds, R. C. Clarke. *Surgery:* H. R. B. Hull,* R. S. S. Statham,* W. T. Clarke.* *Midwifery:* S. Marle, W. W. Pratt.

L.D.S. ENG.—*Mechanical Dentistry and Dental Metallurgy:* R. H. Basker, P. W. Flook, J. W. Gilbert, E. J. Handford, B. L. Morgan, C. H. Wilson. *Metallurgy only:* P. L. Ealand. *Final Examination, Part I:* R. A. Slade, A. H. S. Palmer, B. W. Tyson, F. C. Willows. *Part II:* P. J. Burton,* F. J. Hayman.*

* Denotes qualification.

APPOINTMENTS.

Bristol Royal Infirmary.—*Honorary Dental Surgeon:* F. C. Nichols, M.R.C.S., L.R.C.P. Lond., L.D.S. Eng. *Honorary Dental Anæsthetist:* C. H. Osmond, L.F.P.S. Glas. *Resident Obstetric Officer:* R. E. Thomas, M.B., B.S. Lond. *House Surgeon:* T. S. Hele, M.B., B.C. Cantab. *House Physicians:* A. R. Jordan, M.B., B.C. Cantab., and G. B. Harland, M.B., B.S. Lond. *Resident to the Ear, Nose and Throat Department:* S. H. Kingston, M.R.C.S., L.R.C.P. *Casualty Officer:* R. W. Greatorex, M B., Ch.B. Edin.

Bristol General Hospital.—The following appointments have recently been made:—*House Physician:* W. T. Quinlan, M.R.C.S., L.R.C.P. *House Surgeon:* D. Robertson, M.B., B.Ch.Edin. *Casualty House Surgeon:* S. E. Malherbe, M.B., B.Ch.Edin. *Assistant House Physician:* A. B. Barton, M.B., B.Ch.Edin.

Bristol Dispensary.—T. B. Dixon, M.R.C.S., L.R.C.P., and C. E. K. Herapath, M.B., B.S. Lond., have been appointed Medical Officers.

Clifton Dispensary.—H. K. Salisbury, M.R.C.S., L.R.C.P., has been appointed Medical Officer.

Clifton College.—J. M. Fortescue-Brickdale, M.A., M.D. Oxon., has been appointed Physician.

Bradford Royal Infirmary.—F. C. Morgan, M.R.C.S., L.R.C.P., has been appointed House Surgeon.

Bristol Royal Infirmary.—The 174th Annual Report, being that for the year 1909, forms a handsome and well-illustrated volume of 116 pages, and gives a full record of excellent work done in the various departments, and outlines the scheme for new buildings, embracing new surgical wards, new casualty department, and operating rooms, to be connected with the old building by spacious subways. The in-patients numbered 3,819, and the large number of 50,195 out-patients is registered. An increased subscription list is urgently needed.

General Hospital.—At the half-yearly meeting of the Governors held on March 14th, presided over by the Lord Mayor, the report presented showed that the Hospital had done more work during the past year than during any time previously; the in-patients numbered 2,700, and the out-patients 39,522, with 5,867 dental out-patients. There were 344 maternity cases. The ordinary income amounted to £10,905, in addition to which there were legacies amounting to £4,482, and special donations towards debt reduction totalling £2,500. The total expenditure was £14,529, a reduction of £450 on 1908. The amount due to the Treasurer now stands at £2,937.

Royal Hospital for Sick Children and Women.—At the annual meeting held recently the report showed that the expenditure exceeded the income during 1909 by £160, the income being £4,559, and the expenditure £4,719. The in-patients numbered 754 children and 60 women, and 3,512 children and 1,491 women had attended as out-patients. The Weston-super-Mare Sanatorium had received 65 convalescent patients.

UNIVERSITY OF BRISTOL.

Tropical Medicine.—A series of lectures on Tropical Medicine was recently delivered in the Medical Faculty by Dr. A. J. M. Bentley. It would be well to persevere in this line of work, as Bristol offers many advantages as a centre for the study of tropical diseases.

University Settlement.—A committee has been formed to consider the formation of a University Settlement, the aims of which would be: (*a*) to promote the general welfare of the neighbourhood in which it is situated, (*b*) to provide a centre for the systematic study of social and industrial conditions. The committee considers that the Settlement should include a residence for women, with library and lecture and club rooms for both men and women workers. The importance of training experts in social work is pointed out, and the sympathy of students asked for. About £1,000 would be required for an initial outlay, and the annual cost of maintenance would be about £300. Already £220 has been promised towards the initial cost, although no appeal has as yet been issued.

Royal College of Surgeons of England, Honorary Medal.—As will be seen from the report of the last meeting of the Council of the Royal College of Surgeons, the Honorary Medal of the College was awarded to Dr. Robert Fletcher, M.R.C.S., of Washington, U.S.A. Dr. Fletcher has rendered conspicuous service to medical literature. In 1876 he began to assist in the charge of the library in the office of the Surgeon-General of the United States Army. He afterwards became associate editor, and subsequently editor-in-chief of that unique work, the *Index-Catalogue of the Library of the Surgeon-General's Office*. He was also editor, at first in association with Dr. Billings and since alone, of that useful publication, the *Index-Medicus*. We are glad to claim Dr. Fletcher as a fellow-countryman. He was born at Bristol eighty-four years ago, and began his medical education at the Bristol Infirmary, completing it, we believe, at the London Hospital. He was admitted a Member of the Royal College of Surgeons of England in 1844. Going to the United States, he practised for some time in Cincinnati. He served with credit during the Civil War, being commissioned as

Surgeon of the United States Volunteers and breveted Colonel. We heartily congratulate Dr. Fletcher on the distinction which has been conferred upon him ; it is one of the highest the Royal College of Surgeons has it in its power to bestow. The Honorary Medal was instituted in 1802. It is a gold medal having on the obverse the armorial bearings, crest, supporters and motto of the College, and on the reverse Galen contemplating a human skeleton. The leading considerations in awarding the medal are " liberal acts or distinguished labours, researches and discoveries eminently conducive to the improvement of natural knowledge and of the healing art." It has been awarded only ten times. In the list of recipients are the names of Sir Richard Owen (1883), Sir Erasmus Wilson (1884), Sir James Paget (1897), Lord Lister (1897), and Sir Richard Havelock Charles (1906).—*Brit. M. J.*, 1910, vol. i, p. 1015.

Winsley Sanatorium.—Referring again to the annual report of this Institution (which was commented on in our last issue), it will be noted that during 1909 the number of beds available was 68. Of these 43 are maintained, and 9 leased to various authorities. Of the remaining 16, 12 are reserved for patients willing to pay 15s. per week, and 4 are utilised by the committee for patients who pay 35s. to 42s. per week. The medical report shows that 248 were admitted during 1909, and 236 discharged. Of these 111 left fit for work, 82 improved, 37 not improved, and 6 died in the Sanatorium. The capital debt now amounts to £9,000.

Report of Medical Board.—The usual meetings have been held in accordance with the rules, when the medical visitors have been appointed, applications from doubtful cases have been considered, and the questions referred to the Board have been dealt with. There are now forty-three names on the list: they are, so far as possible, those of physicians who are doing medical work only, but clearly this is not possible in the country districts.

The medical attendant of the patient who signs the first report, which is presumably on behalf of the patient, is at liberty to send his patient to anyone whose name is on the list for the second certificate, which is presumably on behalf of the Sanatorium, and by one who knows, or is expected to know, what cases are desirable in accordance with the objects and aims of the Sanatorium authorities. It would be an excellent arrangement if all cases could be examined by the medical officer to the institution before admission, but it is clearly not possible that all cases shall take a journey to the Sanatorium for this purpose, and it is equally impossible that our medical officer shall spend his time in travelling about the three counties. The time of the resident medical superintendent is fully occupied in the work

of the Sanatorium itself; he has quite the maximum number of cases to supervise daily, but, nevertheless, he is at all times willing to fill in the second certificate on behalf of the Board, of which he is a member.

In endeavouring to select the most suitable cases for Sanatorium treatment, much has been expected from the newer methods of diagnosis, and many tests have been devised which are more or less reliable; in doubtful cases these tests should be of great assistance, but often it happens that they cannot be applied until the patient has already been accepted as a Sanatorium patient.

At the Tuberculosis Conference, held last year at Oxford, much discussion on tuberculosis in children took place; it was pointed out that pulmonary tuberculosis pure and simple was essentially a disease of adult life, whilst children often succumbed to meningeal, abdominal, or more often to a generalised tuberculosis. It has often been found that at the end of the first year some 8 per cent. of all infants dying were found to be tuberculous, and of all children submitted to the *post-mortem* examination under fifteen years of age tuberculosis was found in something like 40 per cent. of the cases; nevertheless it is well known that these cases of children are particularly amenable to treatment, and hence the wisdom of Mr. Arkell's action in endowing a bed for the children of Wiltshire. Unfortunately the age limit laid down by our rules (ten years) must sometimes detract from the utility of such a bed, but it is hoped that cases occurring between the ages of ten and twenty will be given the advantage of Sanatorium life as much as possible, as it must be at this period of life that the success of treatment is most assured and most lasting. It is interesting to note that several of our cases of phthisis in children have been discovered in consequence of the systematic medical inspection of schools.

We trust that the idea that a Sanatorium is of any danger or disadvantage to the neighbourhood in which it is situated is no longer entertained. Medical men know well that the safest place for those with a predisposition to tubercle is a well conducted Sanatorium, and that it is only the ignorant and careless subject of advanced tuberculosis who is a danger to the community, and should be carefully guarded; the tubercle bacillus is now so much under control that we need hear no more of the bacillus scare.